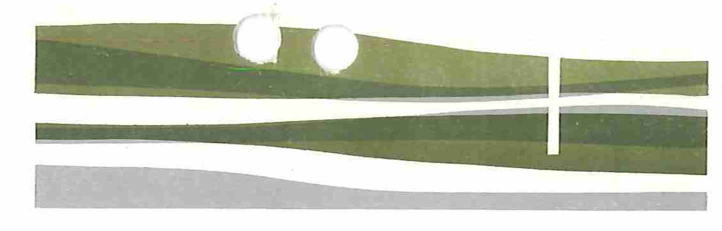


GTI



SOIL TESTING SERVICES OF WISCONSIN, INC.

540 LAMBEAU ST. GREEN BAY, WIS. 54303

March 4, 1976

Harris & Associates, Inc.
718 North Main Street
Appleton, Wisconsin 54911

Attention: Mr. Ted Harris

STS Job 6148-A

RE: Preliminary geohydrological report for the Proposed Lehrer Landfill Site located in the Town of Buchanan in Outagamie County, Wisconsin.

Gentlemen:

In accordance with your authorization, we have proceeded with the initial geohydrological investigation for the above noted site. Enclosed here are the preliminary results of this study. Please note that the information and data enclosed should be considered as preliminary since additional pertinent data, specifically with regard to water levels and ground water quality, is yet to be determined. The final geohydrological study will be submitted under separate cover when all additional data has been obtained. Four copies of this preliminary report have been sent to the above addressee.

If you have any questions with regard to this report, do not hesitate to contact us.

Yours very truly,

SOIL TESTING SERVICES OF WISCONSIN, INC.

Timothy K. Dahlstrand

Timothy K. Dahlstrand
Registered Professional Engineer, Wisconsin

TKD/cs



AFFILIATE OF SOIL TESTING SERVICES, INC.

GREEN BAY PHONE (414) 494-9656
WAUSAU, WISCONSIN - 715—845-8386
MARQUETTE, MICHIGAN - 906—225-1417
MILWAUKEE, WISCONSIN - 414—354-1100

SCOPE OF PRELIMINARY REPORT

At the present date, the geohydrological study for the Lehrer Landfill Site, which is located in parts of Sections 21 and 22, Township 21 north, Range 18 east, Town of Buchanan, Outagamie County, Wisconsin, is not yet complete. The additional work to be performed at this site includes the following:

1. Install three additional shallow wells at the nested well locations of borings 1, 3, and 5, to more accurately determine the uppermost piezometric surface.
2. Install one, 4 inch diameter well within the existing landfill area to monitor any leachate accumulations in such.
3. Perform ground water quality tests from the existing thirteen wells at the site. The parameters which will be tested include pH, conductivity, chlorides, sulfate, total dissolved solids, and COD.
4. Additional monitoring of the existing wells is required since the ground water level within the wells has not yet stabilized.

Because the above data is yet to be generated from this project, this geohydrological report should be considered only as a preliminary submittal, and for this reason, a detailed discussion and analysis is not included with this report. This submittal includes the following information:

1. Soil boring location diagram.
2. Soil boring logs.
3. Laboratory test results (constant head permeability and Atterberg limits)
4. Generalized soil profiles.
5. Topographic map of site
6. Topographic plan view of site showing existing surface drainage.



7. Ground water contour maps depicting ground water flow directions in the following elevation ranges:

619 to 627

627 to 645

645 to 665

665 to 690

8. Preliminary generalized ground water equipotential cross sections (please note that these cross sections were prepared using the latest available ground water data and are subject to further change).

9. Details of the observation well installations.

10. Summary of all ground water level readings obtained at the project site.

11. Summary of vertical ground water gradients.

The above information is supplied without engineering analysis or text since much of it is preliminary, and it is our opinion that additional pertinent data is yet to be realized.

PRELIMINARY OPINION AS TO SITE FEASIBILITY

On the basis of the available soil and ground water obtained to date, it is our opinion that the Lehrer Site is well suited for development into a sanitary landfill. In general, cohesive soils were found to underlay the entire site, having average coefficients of permeability in the range of 1.9×10^{-8} to as low as 7.6×10^{-9} cm/sec. From the soil borings performed at this project site, a well defined geologic profile is obtained. Bedrock was encountered at 50 to 100 feet at the site depending on the surface elevation. The bedrock is flat-lying at approximately elevation 620.

The ground water flow direction was found to be, on the average, in an easterly direction although components at various elevations may tend northeasly or southeastly. This is a ground water recharge area. Because of the low

00790

coefficients of permeability in the subsoils at this site, horizontal and vertical, travel times for the ground water are extremely long.

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INDEX TO APPENDIX

1. Soil boring location plan and topographic map.

2. Existing surface drainage.

3. Index to Generalized Soil Profiles.

4. Generalized Soil Profile,

   Section A-A
   Section B-B

5. General Notes

6. Procedures regarding Field Logs, Laboratory Data Sheeta and Samples.

7. Soil Boring Logs

8. Schematic Observation Well Installations Sections

9 Summary of Constant Head Permeability Test Results

10. Summary of Water Level Observations

11. Preliminary Generalized Ground Water Equipotential Cross Sections,

    Section A-A
    Section B-B

12. Ground Water Contour,

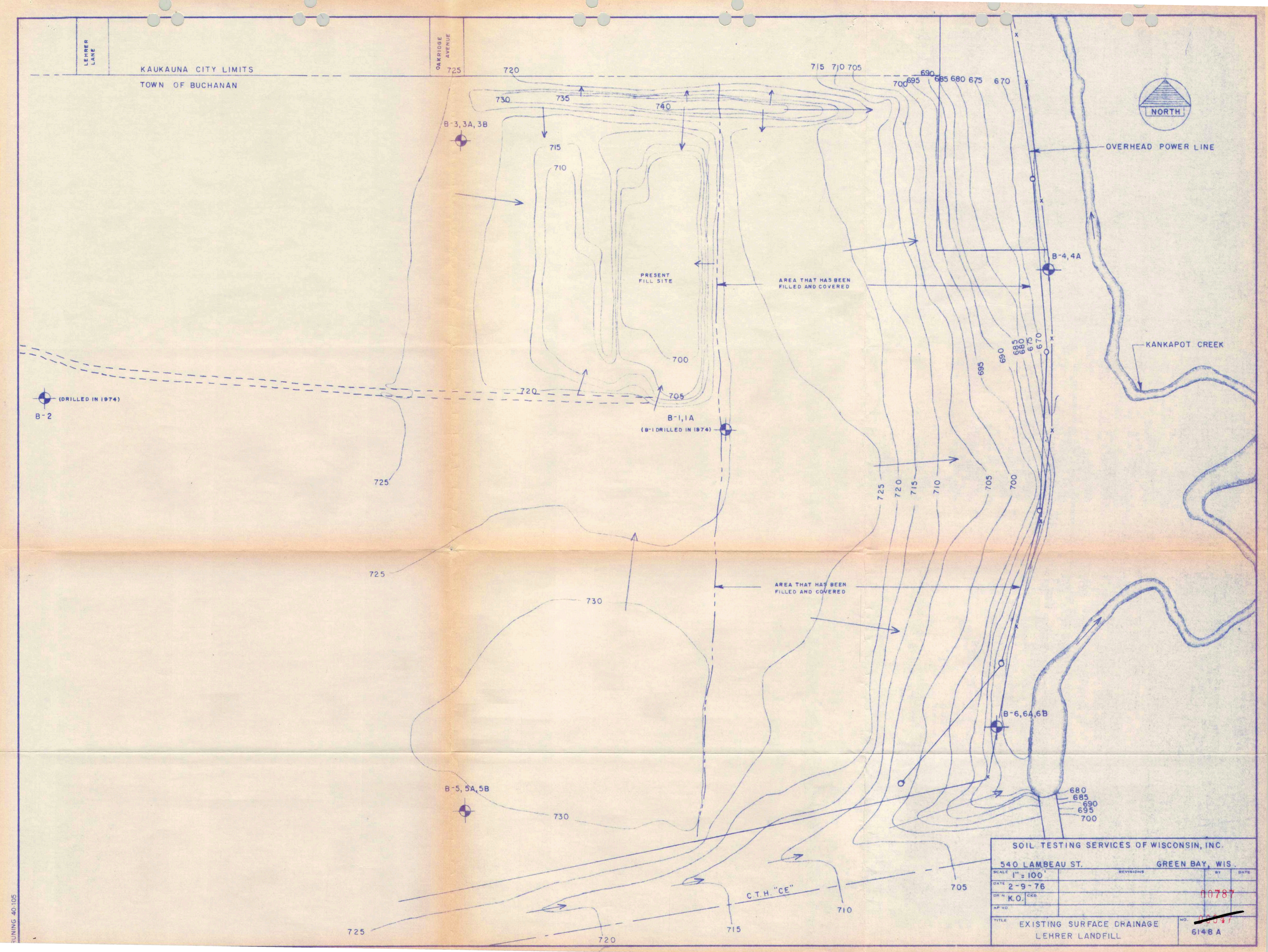
    619 to 627
    627 to 645
    645 to 665
    665 to 690

13. Summary of Vertical Ground Water Gradients.

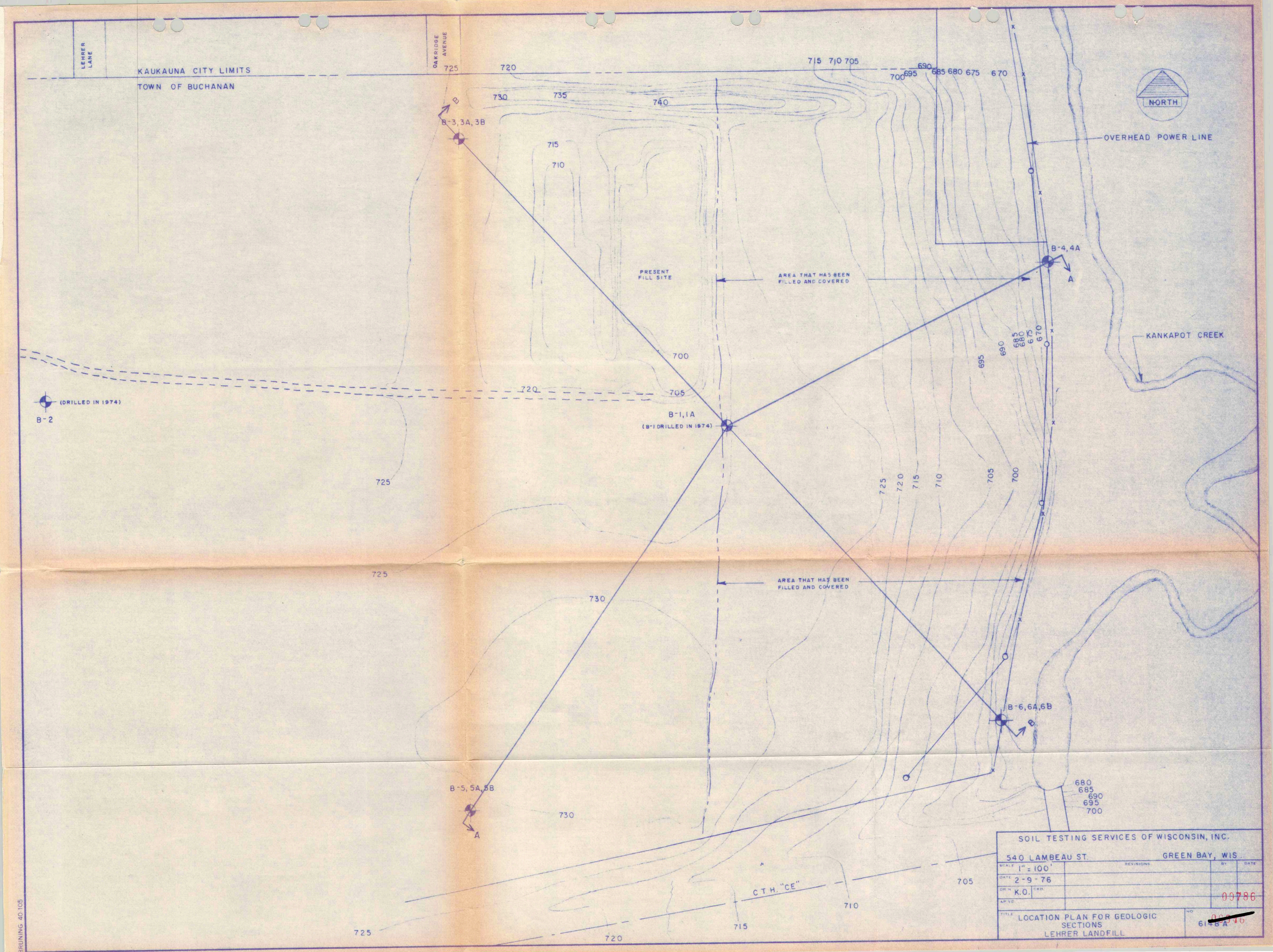
14. Soil Maps.

00788

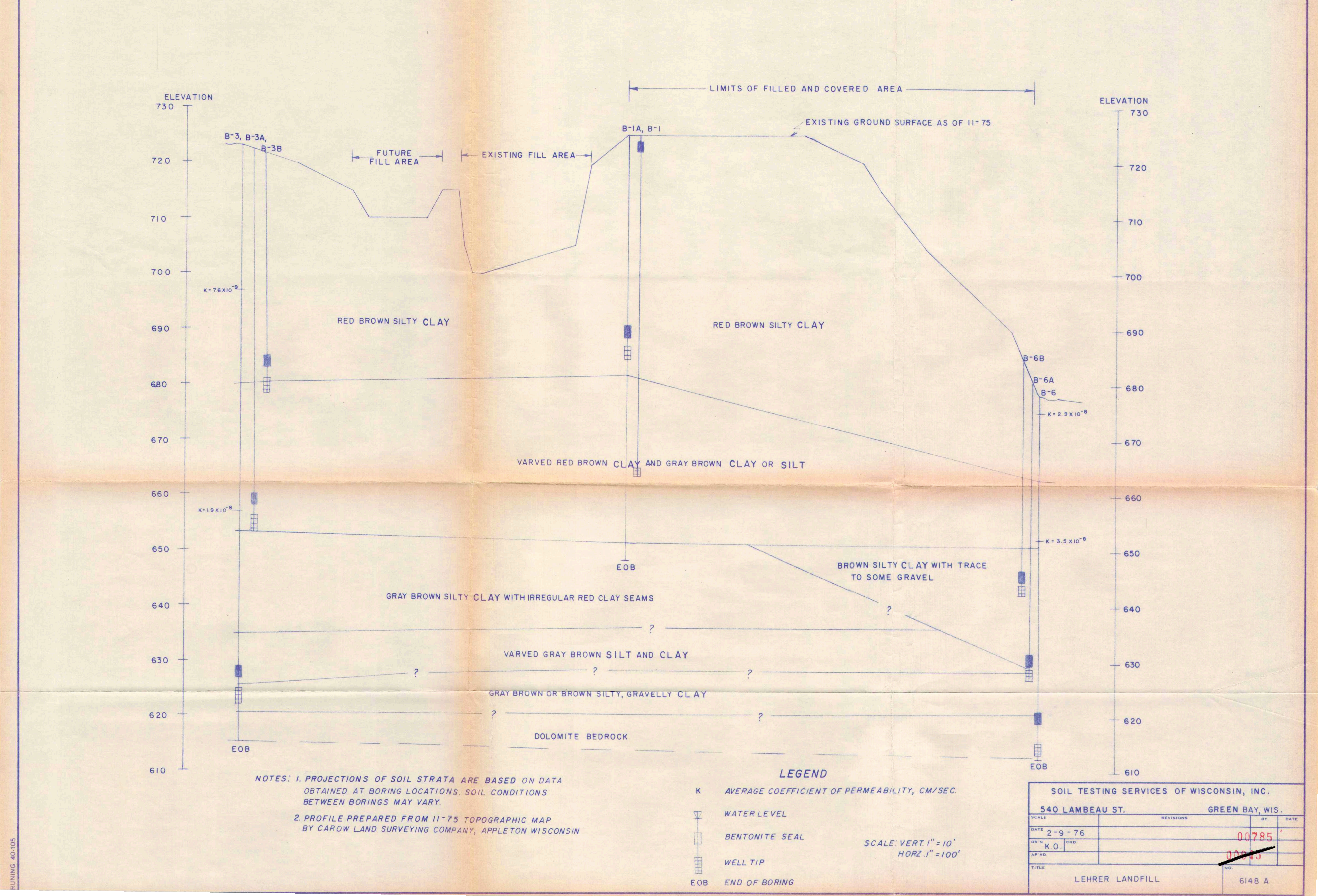




LEHRER LANE
OAKRIDGE AVENUE
KAUKAUNA CITY LIMITS
TOWN OF BUCHANAN
NORTH
OVERHEAD POWER LINE
KANKAPOT CREEK
B-3, 3A, 3B
B-4, 4A
PRESENT FILL SITE
AREA THAT HAS BEEN FILLED AND COVERED
B-2
(DRILLED IN 1974)
B-1, 1A
(B-1 DRILLED IN 1974)
AREA THAT HAS BEEN FILLED AND COVERED
B-6, 6A, 6B
B-5, 5A, 5B
C.T.H. "CE"
725
720
715
710
705
700
695
690
685
680
675
670
730
735
740
SOIL TESTING SERVICES OF WISCONSIN, INC.
540 LAMBEAU ST.
GREEN BAY, WIS.
SCALE 1" = 100'
DATE 2-9-76
DR'N K.O.
REVISIONS
BY
DATE
CKD.
APVD.
TITLE
EXISTING SURFACE DRAINAGE
LEHRER LANDFILL
NO.
6148 A
00787
RUNING 40-105



LEHRER LANE
OAKRIDGE AVENUE
KAUKAUNA CITY LIMITS
TOWN OF BUCHANAN
NORTH
OVERHEAD POWER LINE
KANKAPOT CREEK
B-3, 3A, 3B
B-4, 4A
B-2
(DRILLED IN 1974)
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B-6, 6A, 6B
B-5, 5A, 5B
PRESENT FILL SITE
AREA THAT HAS BEEN FILLED AND COVERED
AREA THAT HAS BEEN FILLED AND COVERED
C.T.H. "CE"
725
720
715 710 705
700 695 690 685 680 675 670
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725
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725 720 715 710 705 700
695 690 685 680 675 670
680 685 690 695 700
705
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725
SOIL TESTING SERVICES OF WISCONSIN, INC.
540 LAMBEAU ST.
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SCALE 1" = 100'
REVISIONS
BY
DATE
DATE 2-9-76
DR'N K.O.
CKD.
AP'VD
00786
TITLE LOCATION PLAN FOR GEOLOGIC SECTIONS LEHRER LANDFILL
NO. 6148 A
BRUNING 40-105



NOTES: 1. PROJECTIONS OF SOIL STRATA ARE BASED ON DATA OBTAINED AT BORING LOCATIONS. SOIL CONDITIONS BETWEEN BORINGS MAY VARY.

2. PROFILE PREPARED FROM 11-75 TOPOGRAPHIC MAP BY CAROW LAND SURVEYING COMPANY, APPLETON WISCONSIN

LEGEND

K AVERAGE COEFFICIENT OF PERMEABILITY, CM/SEC.

WATER LEVEL

BENTONITE SEAL

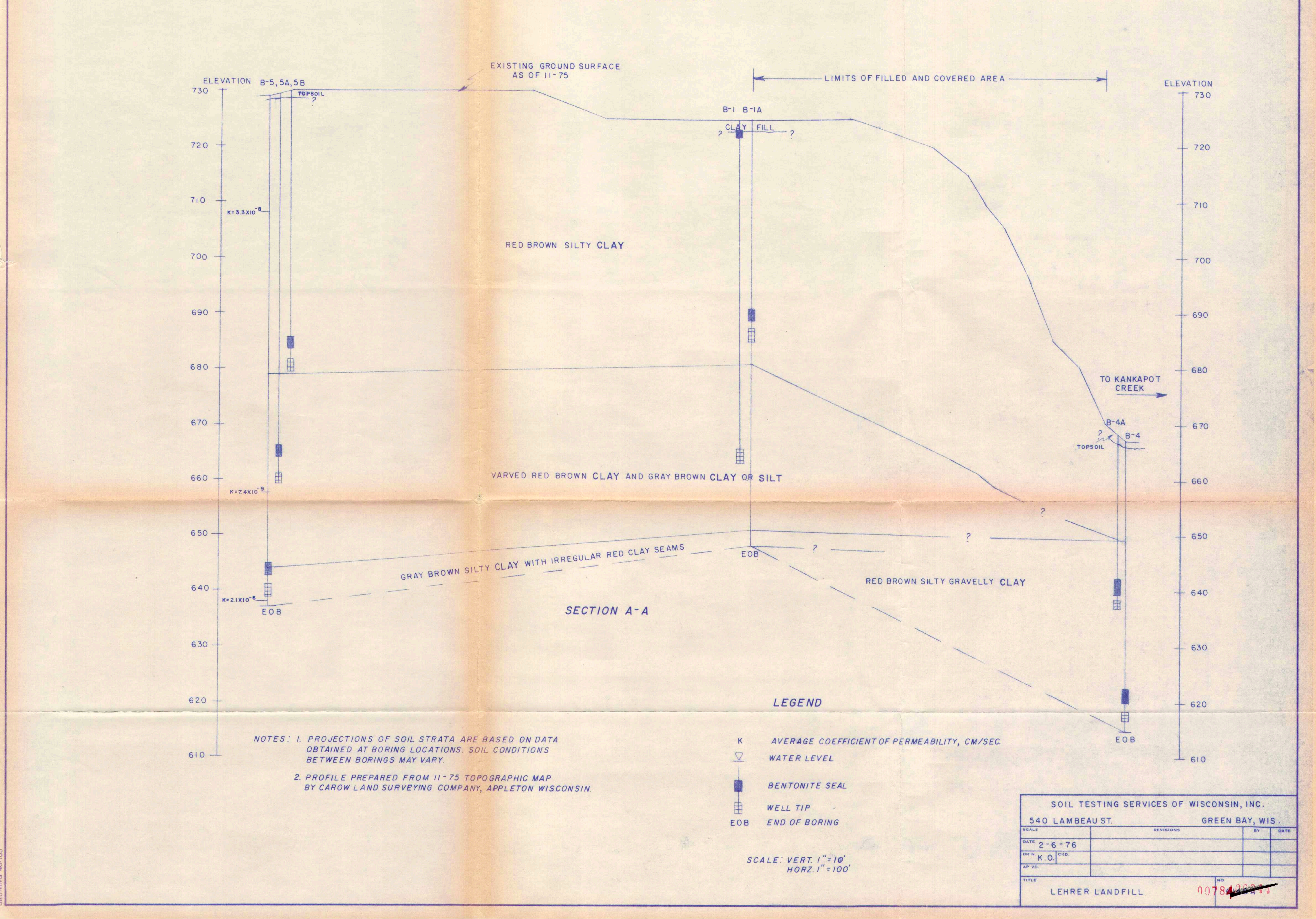
WELL TIP

EOB END OF BORING

SCALE: VERT. 1" = 10'
HORZ. 1" = 100'

SOIL TESTING SERVICES OF WISCONSIN, INC.
540 LAMBEAU ST. GREEN BAY, WIS.

DATE 2-9-76
DR'N K.O.
00785
TITLE LEHRER LANDFILL
NO. 6148 A



GENERALIZED SOIL PROFILE
SECTION A-A
ELEVATION
B-5, 5A, 5B
TOPSOIL
EXISTING GROUND SURFACE
AS OF 11-75
LIMITS OF FILLED AND COVERED AREA
ELEVATION
B-1 B-1A
CLAY FILL
730
720
710
700
690
680
670
660
650
640
630
620
610
K=3.3X10-8
K=7.4X10-9
K=2.1X10-8
RED BROWN SILTY CLAY
TO KANKAPOT CREEK
B-4A
B-4
TOPSOIL
VARVED RED BROWN CLAY AND GRAY BROWN CLAY OR SILT
EOB
GRAY BROWN SILTY CLAY WITH IRREGULAR RED CLAY SEAMS
RED BROWN SILTY GRAVELLY CLAY
SECTION A-A
EOB
EOB
LEGEND
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K AVERAGE COEFFICIENT OF PERMEABILITY, CM/SEC.
WATER LEVEL
BENTONITE SEAL
WELL TIP
EOB END OF BORING
SCALE: VERT. 1"=10'
HORZ. 1"=100'
SOIL TESTING SERVICES OF WISCONSIN, INC.
540 LAMBEAU ST.
GREEN BAY, WIS.
SCALE
REVISIONS
BY
DATE
DATE 2-6-76
DR'N. K.O.
CKD.
AP'VD.
TITLE
LEHRER LANDFILL
NO.
0078
BRUNING 40-105

GENERAL NOTES

1950 Chicago Building Code Soil Classifications are Used Except Where Noted

DRILLING & SAMPLING SYMBOLS

SS : Split-Spoon – 1 3/8" I.D., 2" O.D., except where noted
ST : Shelby Tube – 2" O.D., except where noted
PA : Power Auger Sample
DB : Diamond Bit – NX: BX: AX:
CB : Carboloy Bit – NX: BX: AX:
OS : Osterberg Sampler – 3" Shelby Tube
HS : Housel Sampler
WS : Wash Sample
FT : Fish Tail
RB : Rock Bit
WO : Wash Out

Standard "N" Penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2 inch OD split spoon, except where noted.

WATER LEVEL MEASUREMENT SYMBOLS

WL : Water Level
WCI : Wet Cave In
DCI : Dry Cave In
WS : While Sampling
WD : While Drilling
BCR : Before Casing Removal
ACR : After Casing Removal
AB : After Boring

Water levels indicated on the boring logs are the levels measured in the boring at the times indicated. In pervious soils, the indicated elevations are considered reliable ground water levels. In impervious soils, the accurate determination of ground water elevations is not possible in even several days observation, and additional evidence on ground water elevations must be sought.

CLASSIFICATION

COHESIONLESS SOILS

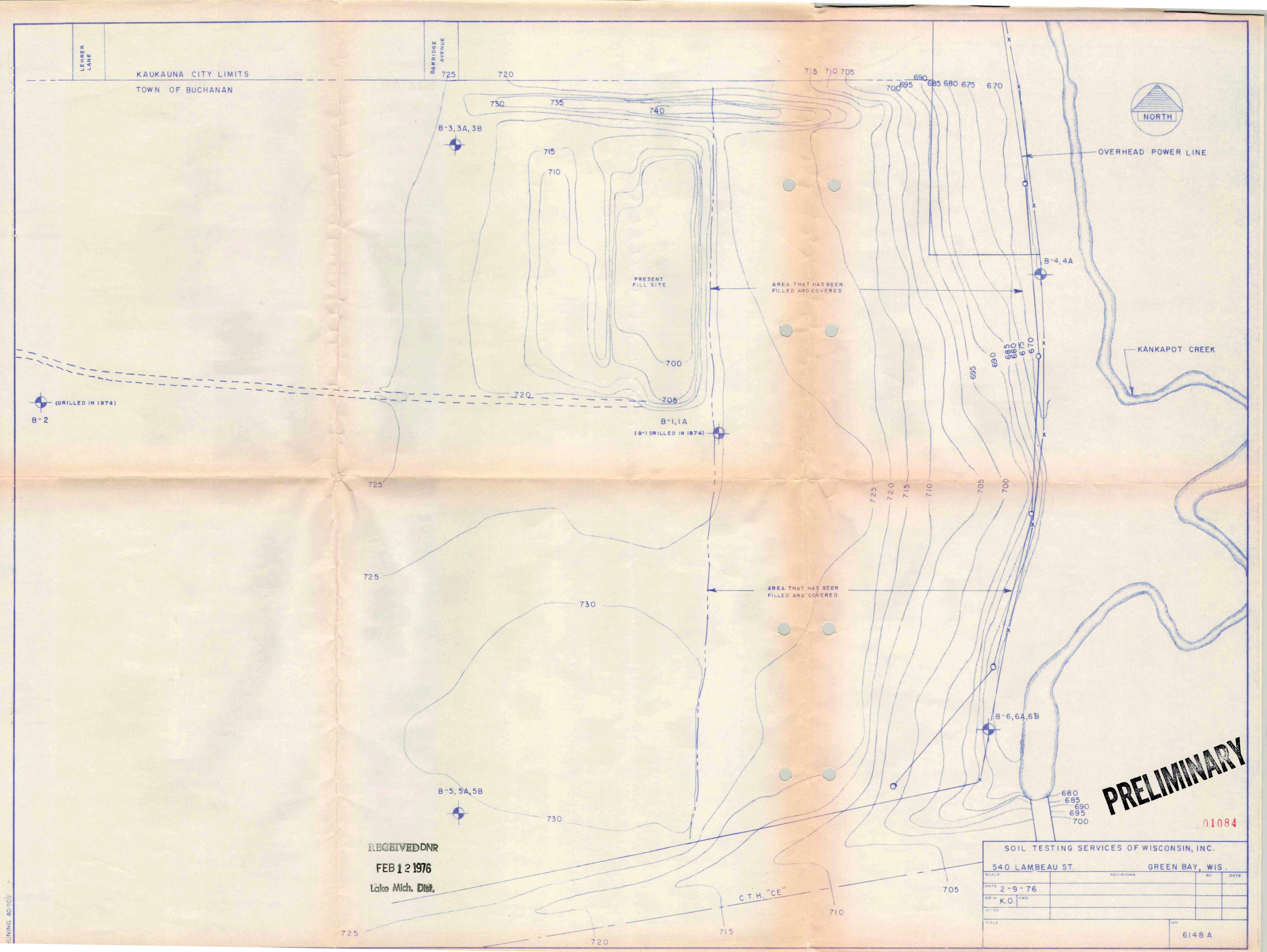
"Trace"	:	1% to 10%	
"Trace to some"	:	10% to 20%	
"Some"	:	20% to 35%	
"And"	:	35% to 50%	
Loose	:	0 to 9 Blows	or equivalent
Medium Dense	:	10 to 29 Blows	or equivalent
Dense	:	30 to 59 Blows	or equivalent
Very Dense	:	≥ 60 Blows	or equivalent

COHESIVE SOILS

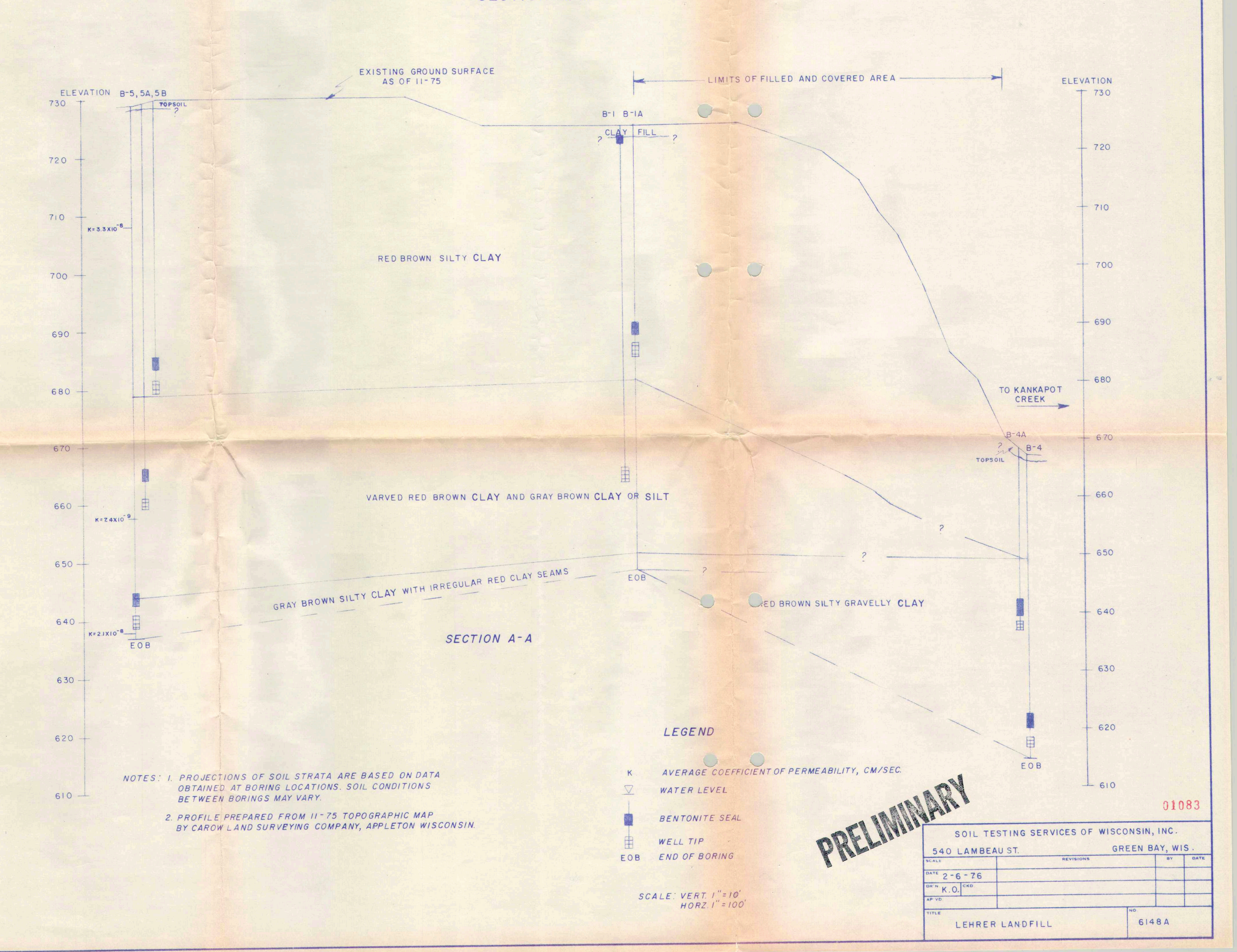
If clay content is sufficient so that clay dominates soil properties, then clay becomes the principle noun with the other major soil constituent as modifier; i.e., silty clay. Other minor soil constituents may be added according to classification breakdown for cohesionless soils; i.e., silty clay, trace to some sand, trace gravel.

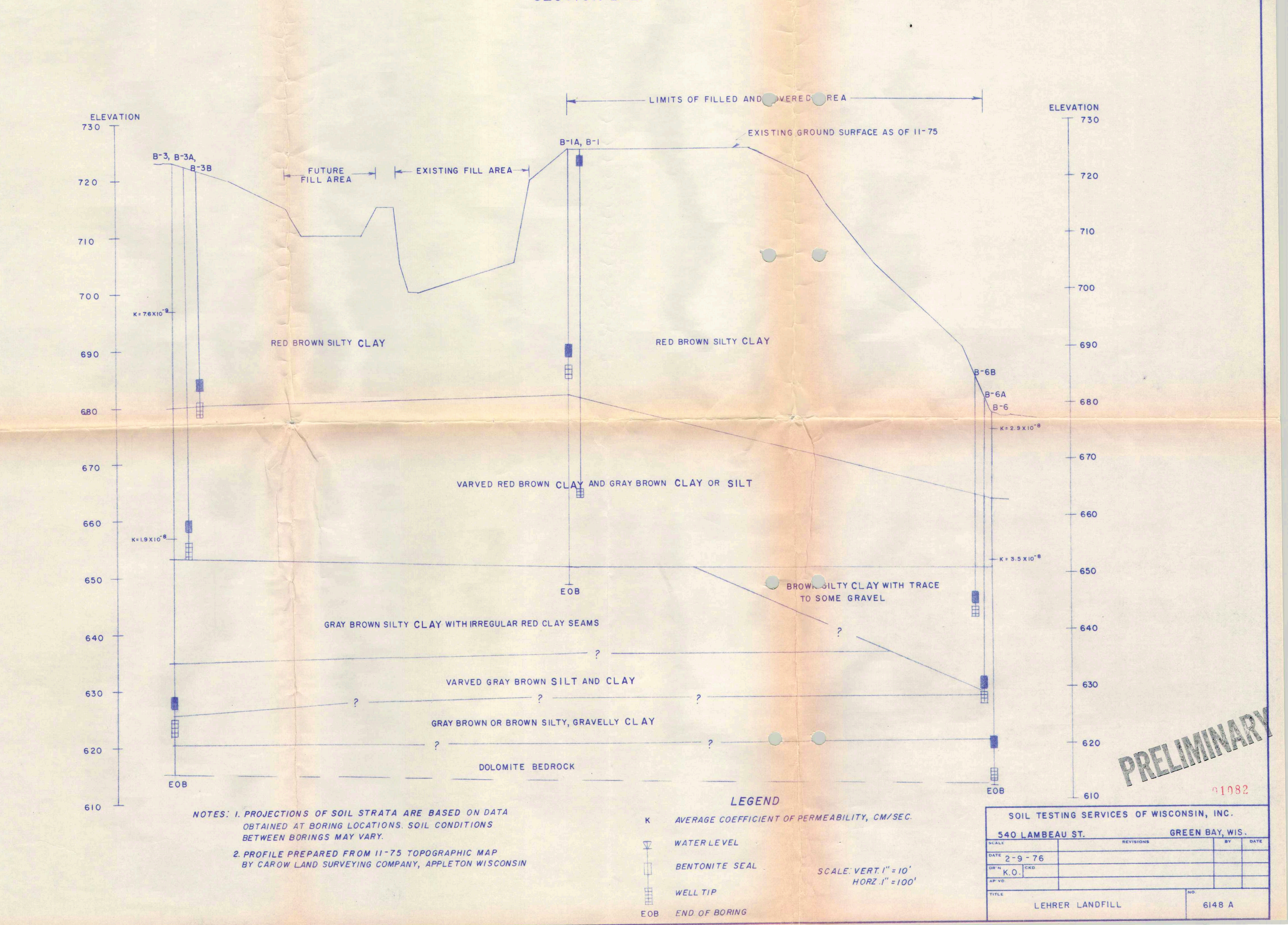
Soft	:	0.00 — 0.59 tons/ft^2
Stiff	:	0.60 — 0.99 tons/ft^2
Tough	:	1.00 — 1.99 tons/ft^2
Very tough	:	2.00 — 3.99 tons/ft^2
Hard	:	≥ 4.00 tons/ft^2

00783



LEHRER LANE
OAKRIDGE AVENUE
KAUKAUNA CITY LIMITS
TOWN OF BUCHANAN
NORTH
OVERHEAD POWER LINE
KANKAPOT CREEK
B-3, 3A, 3B
B-4, 4A
B-2
(DRILLED IN 1974)
B-1, 1A
(B-1 DRILLED IN 1974)
PRESENT FILL SITE
AREA THAT HAS BEEN FILLED AND COVERED
AREA THAT HAS BEEN FILLED AND COVERED
B-6, 6A, 6B
B-5, 5A, 5B
C.T.H. "CE"
725
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740
PRELIMINARY
01084
RECEIVED DNR
FEB 12 1976
Lake Mich. Dist.
SOIL TESTING SERVICES OF WISCONSIN, INC.
540 LAMBEAU ST.
GREEN BAY, WIS.
SCALE
REVISIONS
BY
DATE
DATE 2-9-76
DR'N K.O.
CKD
APP'VD
TITLE
NO.
6148 A


GENERALIZED SOIL PROFILE
SECTION A-A
EXISTING GROUND SURFACE AS OF 11-75
LIMITS OF FILLED AND COVERED AREA
ELEVATION
B-5, 5A, 5B
TOPSOIL
B-1 B-1A
CLAY FILL
K=3.3X10-6
RED BROWN SILTY CLAY
TO KANKAPOT CREEK
B-4A
B-4
TOPSOIL
VARVED RED BROWN CLAY AND GRAY BROWN CLAY OR SILT
K=7.4X10-9
GRAY BROWN SILTY CLAY WITH IRREGULAR RED CLAY SEAMS
RED BROWN SILTY GRAVELLY CLAY
K=2.1X10-8
EOB
SECTION A-A
730
720
710
700
690
680
670
660
650
640
630
620
610
LEGEND
K AVERAGE COEFFICIENT OF PERMEABILITY, CM/SEC.
WATER LEVEL
BENTONITE SEAL
WELL TIP
EOB END OF BORING
NOTES: 1. PROJECTIONS OF SOIL STRATA ARE BASED ON DATA OBTAINED AT BORING LOCATIONS. SOIL CONDITIONS BETWEEN BORINGS MAY VARY.
2. PROFILE PREPARED FROM 11-75 TOPOGRAPHIC MAP BY CAROW LAND SURVEYING COMPANY, APPLETON WISCONSIN.
SCALE: VERT. 1" = 10'
HORZ. 1" = 100'
PRELIMINARY
01083
SOIL TESTING SERVICES OF WISCONSIN, INC.
540 LAMBEAU ST.
GREEN BAY, WIS.
SCALE
REVISIONS
BY
DATE
DATE 2-6-76
DR'N K.O.
CKD
AP'VD
TITLE
LEHRER LANDFILL
NO. 6148A
BRUNING 40-105



NOTES: 1. PROJECTIONS OF SOIL STRATA ARE BASED ON DATA OBTAINED AT BORING LOCATIONS. SOIL CONDITIONS BETWEEN BORINGS MAY VARY.

2. PROFILE PREPARED FROM 11-75 TOPOGRAPHIC MAP BY CAROW LAND SURVEYING COMPANY, APPLETON WISCONSIN

LEGEND

K AVERAGE COEFFICIENT OF PERMEABILITY, CM/SEC.

WATER LEVEL

BENTONITE SEAL

WELL TIP

EOB END OF BORING

SCALE: VERT. 1" = 10'
HORZ. 1" = 100'

SOIL TESTING SERVICES OF WISCONSIN, INC.
540 LAMBEAU ST. GREEN BAY, WIS.

SCALE	REVISIONS	BY	DATE
DATE 2-9-76			
DR'N K.O. CKD			
AP'VD			

TITLE LEHRER LANDFILL — NO. 6148 A

PROCEDURES REGARDING FIELD LOGS,

LABORATORY DATA SHEETS AND SAMPLES

In the process of obtaining and testing samples and preparing the report, procedures are followed that represent reasonable and accepted practice in the field of soil and foundation engineering.

Specifically, field logs are prepared during performance of the drilling and sampling operations which are intended to portray essentially field occurrences, sampling locations and other information.

Samples obtained in the field are frequently subjected to additional testing and reclassification in the laboratory by more experienced soil engineers, and differences between the field logs and the final logs exist.

The engineer preparing the report reviews the field and laboratory logs, classifications and test data, and in his judgement in interpreting this data, may make further changes.

Samples taken in the field, some of which are later subjected to laboratory tests, are retained in our laboratory for sixty days (60) and are then destroyed unless special disposition is requested by our client. Samples retained over a long period of time, even in sealed jars, are subject to moisture loss which changes the apparent strength of cohesive soil, generally increasing the strength from what was originally encountered in the field. Since they are then no longer representative of the moisture conditions initially encountered, an inspection of these samples could recognize this factor.

It is common practice in the soil and foundation engineering profession that field logs and laboratory test data sheets not be included in engineering reports, because they do not represent the engineer's final opinions as to appropriate descriptions for conditions encountered in the exploration and testing work. On the other hand, we are aware that perhaps certain contractors and subcontractors submitting bids or proposals on work might have an interest in studying these documents before submitting a bid or proposal. For this reason, the field logs will be retained in our office for inspection by all contractors submitting a bid or proposal. We would welcome the opportunity to explain any changes that have and typically are made in the preparation of our final reports, to the contractor or sub-contractors, before the firm submits its bid or proposal, and to describe how the information was obtained to the extent the contractor or sub-contractor wishes. Results of laboratory tests are generally shown on the boring logs or are described in the text of the report, as appropriate.

00782



LOG OF BORING NO. 1

OWNER: Town of Buchanan

ARC[...]T-ENGINEER: Car[...] Land Surveying

SITE:

PROJECT NAME: Lehrer Landfill Site

SURFACE ELEVATION: 724.7

DEPTH	SAMPLE NO.	TYPE SAMPLE	DESCRIPTION OF MATERIAL
	1	ST	Silty clay, trace sand, gravel cinders, roots-red brown to black-(CL-Fill)
	2	ST	
	3	ST	Silty clay, trace sand, gravel with occasional light brown silt seams-red brown-hard-(CL)
	4	ST	
10	5	ST	Silty clay, trace sand, gravel trace decayed roots from 20' to 22' and 1/2" to 1" peat pockets-dark brown to brown-tough to hard-(CL-CH)
	6	ST	
20	7	ST	
	8	ST	
30	9	ST	
	10	ST	
40	11	ST	
	12	ST	Varved red silty clay(CH) and gray brown silty clay(CL-CH) in 1/8" to 1/4" layers-very tough to tough-(CH & CL-CH)
50	13	ST	
	14	ST	
60	15	ST	
	16	ST	
70	17	ST	
77.0	18	ST	Silty clay, trace sand, gravel with a few irregular red clay seams-gray brown-tough to very tough-(CL-CH)

UNIT DRY WT. LBS./FT.³

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

STANDARD "N" PENETRATION (BLOWS/FT.) (10, 20, 30, 40, 50)

CL-CH, CH

End of Boring

Note:

1. Well point installed AB as per enclosed drawing with tip at 61.3' below ground surface
2. 2' of 4" casing used
3. Well point protector pipe installed
4. Elevation of top of PVC pipe-726.0

*Calibrated Penetrometer

WATER LEVEL OBSERVATIONS		
W.L.	W.S. OR W.D.	
W.L.	B.C.R.	A.C.R.
W.L.	6.5' AB-Bailed hole to 30' & installed well point	
	[illegible] after W.P. install	

SOIL TESTING SERVICES OF WIS., INC.
GREEN BAY, WISCONSIN
540 LAMBEAU STREET

BORING STARTED 7-9-74
BORING COMPLETED 7-10-74
RIG 28 — FOREMAN EV
DRAWN JK — APPROVED TD
JOB #1143 — SHEET

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

00781

00041

LOG OF BORING NO. 1

OWNER	ARCHITECT-ENGINEER Harris and Associates
SITE Highway 55 and CTH EE Kaukauna, Wisconsin	PROJECT NAME Proposed Lehrer Landfill

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT. 3	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5); PLASTIC LIMIT % X, WATER CONTENT % ●, LIQUID LIMIT % △; STANDARD "N" PENETRATION (BLOWS/FT.) ⊗ (10 20 30 40 50)
					SURFACE ELEVATION 725.4		
5							
10		PA					
15					No soil sampling for installing well point at 40 feet		
20							
25		PA					
30							
35							
40							
					End of Boring		

00780

WATER LEVEL OBSERVATIONS	
W.L.	None to 40' AB
W.L.	B.C.R. / A.C.R.
W.L.	Bailed to 40.0' from top of PVC. Apparently dry to 40.0'

SOIL TESTING SERVICES
OF WIS., INC.
540 LAMBEAU STREET
GREEN BAY, WIS. 54303

BORING STARTED	12-23-75
BORING COMPLETED	12-23-75
RIG 22	FOREMAN BS
DRAWN KO	APPROVED TKD
JOB # 6148 A	SHEET

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

BBS 41075

LOG OF BORING NO. 2

OWNER	ARCHITECT/ENGINEER
Town of Buchanan	Carow[illegible] [illegible] Surveying
SITE	PROJECT NAME
	Lehrer Landfill Site

DEPTH	ELEVATION	SAMPLE NO.	TYPE SAMPLE	DESCRIPTION OF MATERIAL
				SURFACE ELEVATION 729.7
		1	SS	Silty clay, trace to some sand-red brown-hard-(CL)
		2	ST	
		2A	ST	Silty fine sand, trace to some clay lumps, trace gravel-brown (SM-SC)
		3	ST	
		3A	ST	Silty, sandy clay, trace gravel-red brown-hard-(CL-SC)
		4	ST	
10				Silty clay, trace sand, gravel with light gray brown silt seams-red brown-hard-(CL)
		5	ST	
		6	ST	
20				Silty clay, trace sand, gravel with trace decayed roots beginning at 25' to about 38.5'-3/4" peat layer at 36.8'-brown to dark brown-tough to hard-(CL-CH)
		7	ST	
		8	ST	
30				
		9	ST	
		10	ST	
40				
		11	ST	
		12	ST	
		12A	ST	
50				Varved red silty clay (CH) and gray brown silty clay-(CL-CH) in 1/8" to 1/2" layers-very tough to hard-(CH & CL-CH)
		13	ST	
		14	ST	
60				
		15	ST	
		16	ST	
70				
		17	ST	
		18	ST	
80				Clayey, sandy gravel-brown-saturated-very dense-boulders from 79' to 81'-(GP-GC)
81.0		19	SS	
				End of Boring

Chart headings: UNIT DRY WT. LBS./FT.³ — UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5) — PLASTIC LIMIT % ×, WATER CONTENT % ●, LIQUID LIMIT % △ — STANDARD "N" PENETRATION (BLOWS/FT.) ⊗ (10, 20, 30, 40, 50)

Chart labels: CH; CH

⊗ 100/4" Bouncing

*Calibrated Penetrometer

Note:
1. Well point installed after boring with tip at 57.0'
2. 2' of 4" Casing Used
3. Well point protector pipe installed

4. Elevation of top of PVC pipe - 731.9

WATER LEVEL OBSERVATIONS		
W.L.	W.S. OR W.D.	
W.L.	B.C.R.	A.C.R.
W.L.	Before well point installation [illegible] installed well point-well point [illegible]	

SOIL TESTING SERVICES OF WIS., INC.
GREEN BAY, WISCONSIN
540 LAMBEAU STREET

BORING STARTED 7-10-74	
BORING COMPLETED 7-10-74	
RIG 28	FOREMAN EV
DRAWN JK	APPROVED JD
JOB # 6148	SHEET

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

00779

~~00959~~

LOG OF BORING NO. 3

OWNER	ARCHITECT-ENGINEER Harris and Associates
SITE Highway 55 and CTH EE, Kaukauna, Wisconsin	PROJECT NAME Proposed Lehrer Landfill

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)
PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %
STANDARD "N" PENETRATION (BLOWS/FT.) (10, 20, 30, 40, 50)

SURFACE ELEVATION 723.1

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	DESCRIPTION OF MATERIAL
	1	ST	Reddish brown to brown silty clay with trace to some roots, trace gravel-very tough to hard-(CL)
	2	ST	
	3	ST	
	4	ST	Reddish brown silty clay with trace gravel-tough to hard-(CL)
10	5	ST	
	6	ST	Reddish brown silty clay with trace to some organics-tough to very tough-(CL)
15	7	ST	
20	8	ST	Permeability test on Sample 9
25	9	ST	
30	10	ST	
35	11	ST	
40	12	ST	
45	13	ST	Varved reddish brown to gray brown clay and silt-tough to very tough-(CL & ML)
50	14	ST	Permeability test on Sample 17
55	15	ST	
60	16	ST	
65	17	ST	
70	18	ST	Gray to gray brown silty clay with trace gravel-tough-(CL)
75	19	ST	
80	20	ST	
85, 88	21	ST	

Continued

00778

WATER LEVEL OBSERVATIONS		
W.L.	26.0' WD	
W.L.	B.C.R.	A.C.R.
W.L.	Bailed to 96.0' from top of PVC	

SOIL TESTING SERVICES OF WIS., INC.
540 LAMBEAU STREET
GREEN BAY, WIS. 54303

BORING STARTED	12-10-75		
BORING COMPLETED	12-10-75		
RIG	22	FOREMAN	BS
DRAWN	KO	APPROVED	TKD
JOB #	6148 A	SHEET	1 of 2

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

BBS 1075

00038

LOG OF BORING NO. 3

OWNER	ARCHITECT-ENGINEER Harris and Associates
SITE Highway 55 and CTH EE Kaukauna, Wisconsin	PROJECT NAME Proposed Lehrer Landfill

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)
PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △
STANDARD "N" PENETRATION (BLOWS/FT.) (10, 20, 30, 40, 50)

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT. 3
					SURFACE ELEVATION	
88					Continued	
90	22	ST			Varved gray to gray brown clay and silt with trace to some gravel-tough to very tough-(CL & ML)	
95	23	ST				
100	24	ST			Gray gravel and clay-(GC)	
		RB			Weathered Dolomite	
105	Run	DB			Dolomite bedrock	
107	#1	NX			Recovery = 100% - RQD = 100%	
					End of Boring	

*Calibrated Penetrometer

Water loss 100% at depth 106.5' to 107.0'
Obstructions from depth 100.0' to 104.0'
Observation well installed @ 101.0'

00777

WATER LEVEL OBSERVATIONS		
W.L.		
W.L.	B.C.R.	A.C.R.
W.L.	Cave in @ 101.0' AB	

SOIL TESTING SERVICES OF WIS., INC.
540 LAMBEAU STREET
GREEN BAY, WIS. 54303

BORING STARTED 12-10-75	
BORING COMPLETED 12-10-75	
RIG 22	FOREMAN BS
DRAWN KO	APPROVED TKD
JOB # 6148 A	SHEET 2 of 2

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

RRS 41075

LOG OF BORING NO. 3-A

OWNER	ARCHITECT-ENGINEER Harris and Associates
SITE Highway 55 and CTH EE Kaukauna, Wisconsin	PROJECT NAME Proposed Lehrer Landfill

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT. 3	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5); PLASTIC LIMIT % X, WATER CONTENT % ●, LIQUID LIMIT % △; STANDARD "N" PENETRATION (BLOWS/FT.) ⊗ (10 20 30 40 50)
					SURFACE ELEVATION 723.0		
5							
10							
15							
20					No soil sampling-installed well point at 70.0 feet		
25							
30							
35							
40							
45							
50							
55							
60							
65							
70					End of Boring		

00776

WATER LEVEL OBSERVATIONS			
W.L.	23' WD		
W.L.		B.C.R.	A.C.R.
W.L.	Bailed to 69.0' from top of PVC		

SOIL TESTING SERVICES OF WIS., INC.
540 LAMBEAU STREET
GREEN BAY, WIS. 54303

BORING STARTED	12-15-75
BORING COMPLETED	12-15-75
RIG 22	FOREMAN BS
DRAWN KO	APPROVED TKD
JOB # 6148 A	SHEET

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

BBS 1075

00036

LOG OF BORING NO. 3-

OWNER	ARCHITECT-ENGINEER Harris and Associates
SITE Highway 55 and CTH EE Kaukauna, Wisconsin	PROJECT NAME Proposed Lehrer Landfill

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT. 3	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5) / PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △ / STANDARD "N" PENETRATION (BLOWS/FT.) ⊗ (10 20 30 40 50)
					SURFACE ELEVATION 724.39		
5		PA					
10							
15							
20					No soil sampling-installed well point at 45 feet		
25		PA					
30							
35							
40							
45							
					End of Boring		

00775

WATER LEVEL OBSERVATIONS		
W.L.	23' WD	
W.L.	B.C.R.	A.C.R.
W.L.	Bailed to 46.0'	

SOIL TESTING SERVICES
OF WIS., INC.
540 LAMBEAU STREET
GREEN BAY, WIS. 54303

BORING STARTED	
BORING COMPLETED	
RIG	FOREMAN
DRAWN	APPROVED
JOB # 6148 A	SHEET

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

00055

LOG OF BORING NO. 4

OWNER	ARCHITECT-ENGINEER
	Harris and Associates
SITE Highway 55 and CTH EE Kaukauna, Wisconsin	PROJECT NAME Proposed Lehrer Landfill

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)
PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %
STANDARD "N" PENETRATION (BLOWS/FT.) (10 20 30 40 50)

SURFACE ELEVATION 667.1

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT. 3
	1	ST	Red brown sandy clayey topsoil-with trace gravel and roots-very tough-(SC)	
	1A	ST		
	2	ST	Red brown silty clay-trace to some sand and gravel-stiff to very tough-(CL)	
	3	ST		
	4	ST		
10	5	ST	Red brown silty clay with trace to some gravel-tough to very tough-(CL)	
	6	ST		
	7	ST		
20				
	8	ST	Red brown silty clay with trace to some gravel, cobbles, and boulders-tough to very tough-(GC)	
30	9	ST		
	10	ST		
40	11	ST		
	12	ST		
50				132
52.0	13	ST		

End of Boring

Boulders or obstructions from 18' to 22'
Boulders likely from 18' to end of boring
Observation well installed

*Calibrated Penetrometer

00774

WATER LEVEL OBSERVATIONS		
W.L.		
W.L.	B.C.R.	A.C.R.
W.L.	0.5' AB	
	Bailed to 50.0' from top of PVC	

SOIL TESTING SERVICES OF WIS., INC.
540 LAMBEAU STREET
GREEN BAY, WIS. 54303

BORING STARTED 12-31-75	
BORING COMPLETED 1-2-76	
RIG 22	FOREMAN BS
DRAWN KO	APPROVED TKD
JOB # 6148 A	SHEET

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

00034

LOG OF BORING NO. 4-A

OWNER	ARCHITECT-ENGINEER Harris and Associates
SITE Highway 55 and CTH EE Kaukauna, Wisconsin	PROJECT NAME Proposed Lehrer Landfill

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT. 3	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (O) 1 2 3 4 5 / PLASTIC LIMIT % (X) WATER CONTENT % (●) LIQUID LIMIT % (△) / STANDARD "N" PENETRATION (BLOWS/FT.) (⊗) 10 20 30 40 50
					SURFACE ELEVATION 667.1		
5							
10					No samples - well point installed at 30.0 feet		
15							
20							
25							
30					End of Boring		

00773

WATER LEVEL OBSERVATIONS		
W.L.		
W.L.	B.C.R.	A.C.R.
W.L.	0.5' AB	
	Bailed to 31.0'	

SOIL TESTING SERVICES
OF WIS., INC.
540 LAMBEAU STREET
GREEN BAY, WIS. 54303

BORING STARTED	
BORING COMPLETED	
RIG	FOREMAN
DRAWN	APPROVED
JOB # 6148 A	SHEET

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

00033

LOG OF BORING NO. 5

OWNER	ARCHITECT-ENGINEER Harris and Associates
SITE Highway 55 and CTH EE Kaukauna, Wisconsin	PROJECT NAME Proposed Lehrer Landfill

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5) — PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % — STANDARD "N" PENETRATION (BLOWS/FT.) (10, 20, 30, 40, 50)

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
			SURFACE ELEVATION 728.9	
	1	ST	Brown sandy topsoil-hard-(SC)	
	1A	ST	Brown silty clay with trace to some sand and gravel-very tough to hard-(CL)	
	2	ST		
5	3	ST		
	4	ST	Red brown silty clay with trace gravel-tough-(CL)	112
10	5	ST		
	6	ST	Brown clayey silt with trace sand and gravel-hard-(ML)	113
15	7	ST	Brown silty clay with trace gravel-soft to tough-(CL-CH)	118
20	8	ST	Permeability Test on Sample 8	
25	9	ST	Red brown silty clay with trace gravel and woody fibers-very tough to hard-(CL)	106
30	10	ST		
35	11	ST		
40	12	ST	Red brown silty clay with occasional silt seams-hard-(CL)	
45	13	ST		
50	14	ST	Varved red brown clay and gray brown silt 1/4" to 1.0" in thickness-tough to very tough-(CL & ML) Permeability test on Sample 18	
55	15	ST		
60	16	ST		
65	17	ST		
70	18	ST		
75	19	ST		
80	20	ST		
85	21	ST	Gray brown silty clay with trace to some gravel and occasional seams of red clay-tough-(CL) Permeability test on Sample 22	
90	22	ST		
92			End of Boring Observation well installed at 90.0'	

*Calibrated Penetrometer

WATER LEVEL OBSERVATIONS		
W.L.		
W.L.	B.C.R.	A.C.R.
W.L.		

SOIL TESTING SERVICES OF WIS., INC.
540 LAMBEAU STREET
GREEN BAY, WIS. 54303

BORING STARTED	12-18-75		
BORING COMPLETED	12-22-75		
RIG	22	FOREMAN	BS
DRAWN	KO	APPROVED	TKD
JOB #	6148 A	SHEET	1 of 1

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

BBS 1075

00772

LOG OF BORING NO. 5-A

OWNER	ARCHITECT-ENGINEER Harris and Associates
SITE Highway 55 and CTH EE Kaukauna, Wisconsin	PROJECT NAME Proposed Lehrer Landfill

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT. 3	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5); PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △; STANDARD "N" PENETRATION (BLOWS/FT.) ⊗ (10 20 30 40 50)
					SURFACE ELEVATION 729.1		
10–25		PA			No soil sampling well point installed at 70.0 feet		
25–70		FT					
70					End of Boring Obstruction at 66.0 feet		

00771

WATER LEVEL OBSERVATIONS		
W.L.	19.0' WD	
W.L.	B.C.R.	A.C.R.
W.L.	63.1' after bailing	

SOIL TESTING SERVICES OF WIS., INC.
540 LAMBEAU STREET
GREEN BAY, WIS. 54303

BORING STARTED		12-16-75	
BORING COMPLETED		12-18-75	
RIG	22	FOREMAN	BS
DRAWN	KO	APPROVED	TKD
JOB #	6148 A	SHEET	

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

00031

BBS 1075

LOG OF BORING NO. 5

OWNER	ARCHITECT-ENGINEER Harris and Associates
SITE Highway 55 and CTH EE Kaukauna, Wisconsin	PROJECT NAME Proposed Lehrer Landfill

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.3	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5) / PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △ / STANDARD "N" PENETRATION (BLOWS/FT.) ⊗ (10 20 30 40 50)
					SURFACE ELEVATION 729.0		
5							
10							
15		FT					
20					No soil sampling-well point installed		
25					at 50.0 feet		
30							
35							
40							
45							
50							
					End of Boring		

00770

WATER LEVEL OBSERVATIONS	
W.L.	49.8' AB
W.L.	B.C.R. A.C.R.
W.L.	Bailed to 49.8' from top of PVC

SOIL TESTING SERVICES
OF WIS., INC.
540 LAMBEAU STREET
GREEN BAY, WIS. 54303

BORING STARTED	
BORING COMPLETED	
RIG 22	FOREMAN
DRAWN KO	APPROVED TKD
JOB # 6148 A	SHEET

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

00030

LOG OF BORING NO. 6

OWNER	ARCHITECT-ENGINEER Harris and Associates
SITE Highway 55 and CTH EE Kaukauna, Wisconsin	PROJECT NAME Proposed Lehrer Landfill

SURFACE ELEVATION 678.84

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	DESCRIPTION OF MATERIAL
	1	ST	
	2	ST	Red brown to brown silty clay with trace to some sand and gravel and with trace to some roots, woody fibers and black peaty pockets-possibly fill material-soft to very tough-(CL) Permeability test on Sample 2
5	3	ST	
	4	ST	
10	5	ST	
	6	ST	
15	7	ST	Irregularly varved red brown clay and gray brown silt with trace gravel-tough-(CL-ML) Permeability test on Sample 9
20	8	ST	
25	9	ST	
30	10	ST	Brown silty clay with trace to some gravel in the form of limestone pieces-trace to some cobbles and boulders-tough-(CL)
35	11	ST	
40	12	ST	REFUSAL, BOULDER
45	13	SS	31
50	14	SS	Brown silty clay with trace to some sand, gravel, cobbles and boulders-hard-(GC) 75/6"
55	15	SS	80/6"
60	16	SS	Weathered broken rock 100/6"
65.5		RB	

End of Boring
61' of NX casing

Boulders or obstructions from 43' to end of boring
Observation well installed at 64.5'

*Calibrated Penetrometer

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² 1 2 3 4 5
PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %
STANDARD "N" PENETRATION (BLOWS/FT.) 10 20 30 40 50
UNIT DRY WT. LBS./FT.3

00769

WATER LEVEL OBSERVATIONS			
W.L.	10.0' WS		
W.L.	5.0'	B.C.R. 5.0'	A.C.R.
W.L.	27.0' AB		
Bailed to 27.0' from top of PVC			

SOIL TESTING SERVICES OF WIS., INC.
540 LAMBEAU STREET
GREEN BAY, WIS. 54303

BORING STARTED	12-23-75		
BORING COMPLETED	12-23-75		
RIG 22		FOREMAN	BS
DRAWN	KO	APPROVED	TKD
JOB # 6148 A		SHEET	

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

BBS 1075

00029

LOG OF BORING NO. 6-[illegible]

OWNER	ARCHITECT-ENGINEER Harris and Associates
SITE Highway 55 and CTH EE Kaukauna, Wisconsin	PROJECT NAME Proposed Lehrer Landfill

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT. 3	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5) / PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △ / STANDARD "N" PENETRATION (BLOWS/FT.) ⊗ (10 20 30 40 50)
					SURFACE ELEVATION		
5							
10		RB					
15							
20					No samples taken-well point installed at 51.0 feet		
25							
30							
35		RB					
40							
45							
50							
51.0					End of Boring		

00768

WATER LEVEL OBSERVATIONS		
W.L.	0.5' AB	
W.L.	B.C.R.	A.C.R.
W.L.		

SOIL TESTING SERVICES
OF WIS., INC.
540 LAMBEAU STREET
GREEN BAY, WIS. 54303

BORING STARTED 12-31-75	
BORING COMPLETED 12-31-75	
RIG 22	FOREMAN BS
DRAWN KO	APPROVED TKD
JOB # 6148 A	SHEET

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

00023

LOG OF BORING NO. 6-I

OWNER	ARCHITECT-ENGINEER Harris and Associates
SITE Highway 55 and CTH EE, Kaukauna, Wisconsin	PROJECT NAME Proposed Lehrer Landfill

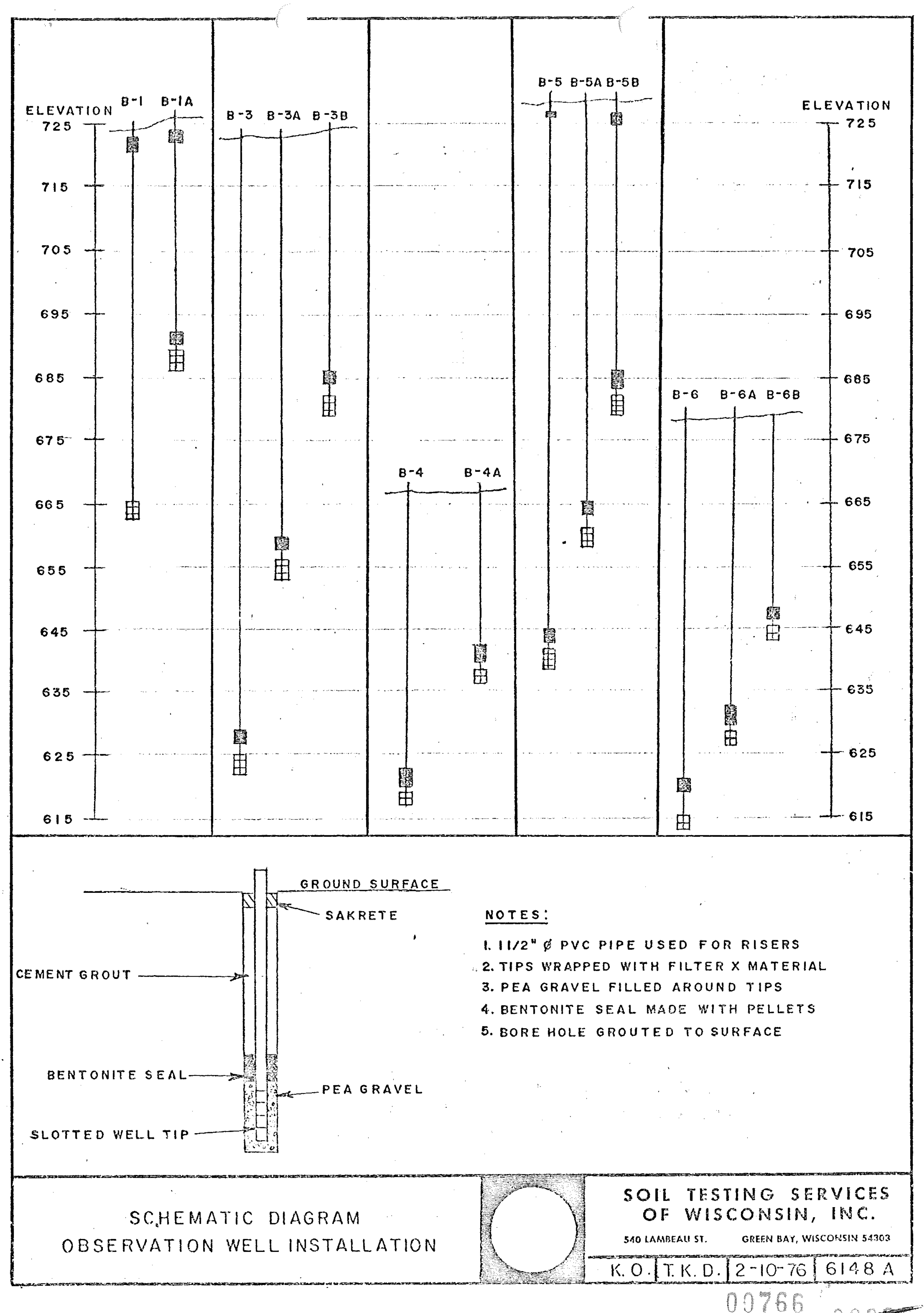
DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT. 3	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5) / PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △ / STANDARD "N" PENETRATION (BLOWS/FT.) ⊗ (10 20 30 40 50)
					SURFACE ELEVATION 674.24		
5							
10					No samples taken-well point installed at 36.0 feet		
15		RB					
20							
25							
30							
35							
36.0					End of Boring PVC broken off at ground		

00767

WATER LEVEL OBSERVATIONS			SOIL TESTING SERVICES OF WIS., INC. 540 LAMBEAU STREET GREEN BAY, WIS. 54303	BORING STARTED 12-30-75	
W.L.	0.5' AB			BORING COMPLETED 12-30-75	
W.L.	B.C.R.	A.C.R.		RIG 22	FOREMAN BS
W.L.	34.4' after bailing			DRAWN KO	APPROVED TKD
	Bailed to 34.4' from top of PVC			JOB # 6148 A	SHEET

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

00027



ELEVATION
725
715
705
695
685
675
665
655
645
635
625
615
B-1
B-1A
B-3
B-3A
B-3B
B-4
B-4A
B-5
B-5A
B-5B
B-6
B-6A
B-6B
GROUND SURFACE
SAKRETE
CEMENT GROUT
BENTONITE SEAL
PEA GRAVEL
SLOTTED WELL TIP
NOTES:
1. 11/2" ø PVC PIPE USED FOR RISERS
2. TIPS WRAPPED WITH FILTER X MATERIAL
3. PEA GRAVEL FILLED AROUND TIPS
4. BENTONITE SEAL MADE WITH PELLETS
5. BORE HOLE GROUTED TO SURFACE
SCHEMATIC DIAGRAM
OBSERVATION WELL INSTALLATION
SOIL TESTING SERVICES
OF WISCONSIN, INC.
540 LAMBEAU ST.
GREEN BAY, WISCONSIN 54303
K.O.
T.K.D.
2-10-76
6148 A
00766

LEHRER LANDFILL

Job No. 6148-A

SUMMARY OF CONSTANT HEAD PERMEABILITY TEST RESULTS

Boring	Sample	Depth	Soil Description	Test Duration (Seconds)	Coefficient of Permeability (cm/sec)
3	9	25'-27'	Red brown silty clay with trace to some organic matter (CL)	60,300	5.0×10^{-9}
				25,200	1.3×10^{-8}
				242,100	4.9×10^{-9}
3	17	65'-67'	Varved reddish brown to gray brown clay and silt (CL & ML)	25,200	3.0×10^{-8}
				60,900	1.7×10^{-8}
				181,200	1.0×10^{-8}
5	8	20'-22'	Red brown silty clay, trace gravel (CL-CH)	64,800	2.6×10^{-8}
				30,600	4.8×10^{-8}
				71,700	2.4×10^{-8}
5	18	70'-72'	Varved red & brown clay & gray brown silt in ¼" to 1" seams (CL & ML)	25,200	8.1×10^{-9}
				60,900	5.0×10^{-9}
				27,000	9.0×10^{-9}
5	22	90'-92'	Gray brown silty clay, trace to some gravel, red clay seams (CL)	23,400	1.6×10^{-8}
				24,000	3.1×10^{-8}
				71,700	1.5×10^{-8}
6	2	2'-4'	Red brown to brown silty clay, trace to some sand, gravel-(CL)	87,300	2.8×10^{-8}
				60,300	2.5×10^{-8}
				25,200	3.3×10^{-8}

CONT'D

LEHRER LANDFILL

Job No. 6148-A

SUMMARY OF CONSTANT HEAD PERMEABILITY TEST RESULTS

Boring	Sample	Depth	Soil Description	Test Duration (Seconds)	Coefficient of Permeability (cm/sec)
6	9	25'-27'	Irregularly varved red brown clay & gray brown silt, trace gravel (CL-ML)	87,300	2.9×10^{-8}
				60,300	3.3×10^{-8}
				26,400	4.2×10^{-8}

6148-A

LEHRER LANDFILL

SUMMARY OF WATER LEVEL OBSERVATIONS

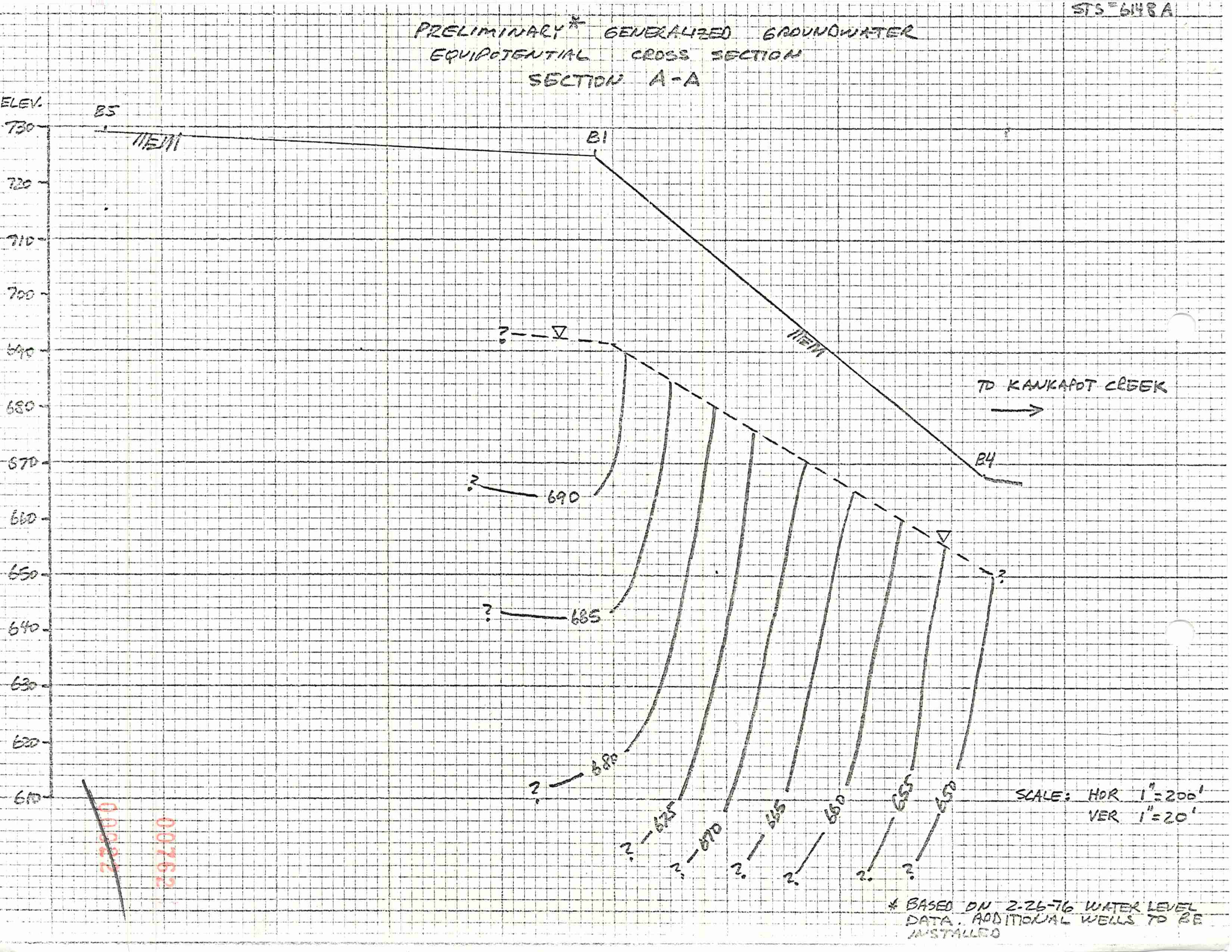
Location	Elevation Top of PVC	Elevation Ground Surface	Elevation Bentonite Seal	Water Level After Bailing	Water Level 2-5-76	Water Level 2-10-76	Water Level 2-17-76	Water Level 2-26-76	Water Level	Water Level
B1	725.4	724.7	665	*	*	690.7	690.4	690.4		
B1A	726.9	725.4	688.5	Dry	689.9	692.2	693.9	694.9		
B2*	731.9	729.7	726	*	*	*	*	*		
B3	724.44	723.1	627	626.4	651.9	653.9	653.6	654.1		
B3A	724.2	723.0	658	655.2	693.2	694.7	696.2	696.2		
B3B	722.9	724.39	683	676.9	697.9	697.9	697.9	697.9		
B4	668.5	667.1	620	618.5	638.1	641.8	644.5	648.3		
B4A	668.6	667.1	639.5	638.6	645.3	647.1	648.8	650.6		
B5	730.2	728.9	642.5	***	682.2	683.2	683.2	683.2		
B5A	730.4	729.1	664	667.3	682.4	683.9	684.4	684.4		
B5B	730.5	729.0	683.5	680.7	724.5	724.5**	716.5	718.0		
B6	680.24	678.84	619	653.2	653.2	653.9	654.2	654.2		
B6A	*	*	629.5	*	*	*	*	9.5'		
B6B	679.24	679.24	644.5	644.8	656.9	658.2	659.7	661.2		

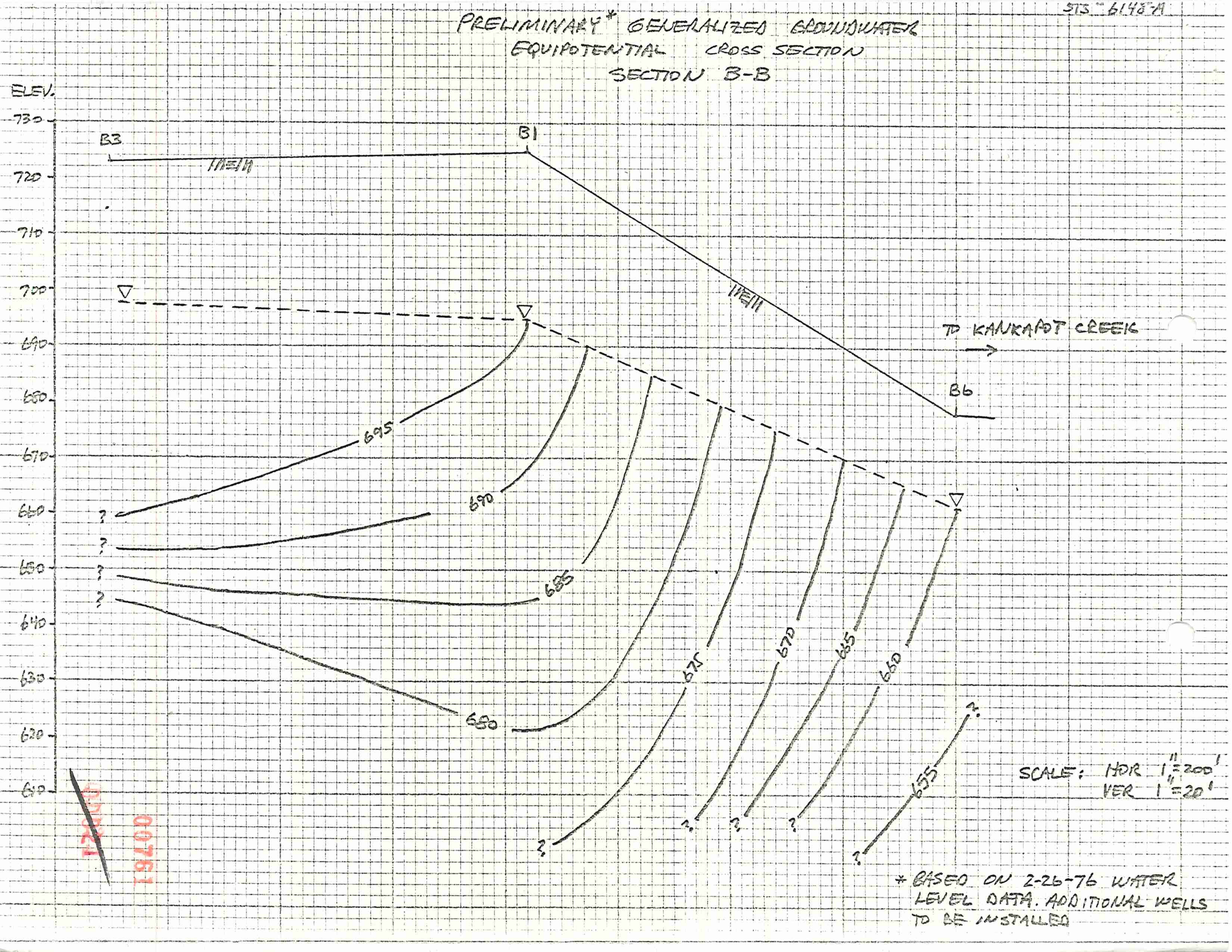
* Unable to locate
** Rebailed to 693.5 on 2-10-76 WL @ 693.5, 1 Hr. after bailing
*** Could not bail below 682

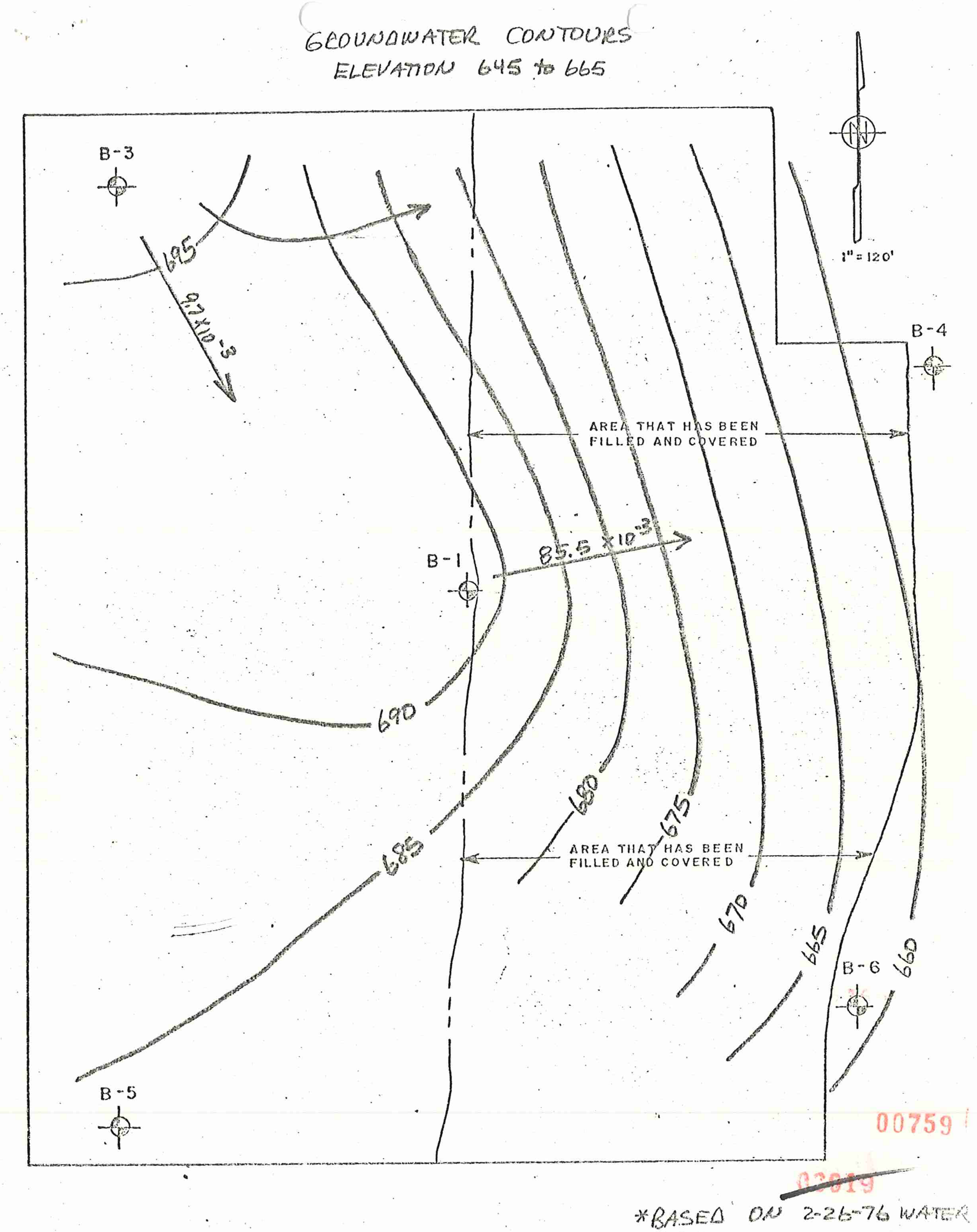
Notes
1. All elevations referenced to Kaukauna City Datum
2. B1 and B2 completed in July, 1974. Remaining borings completed during December, 1975 and January, 1976.

00023

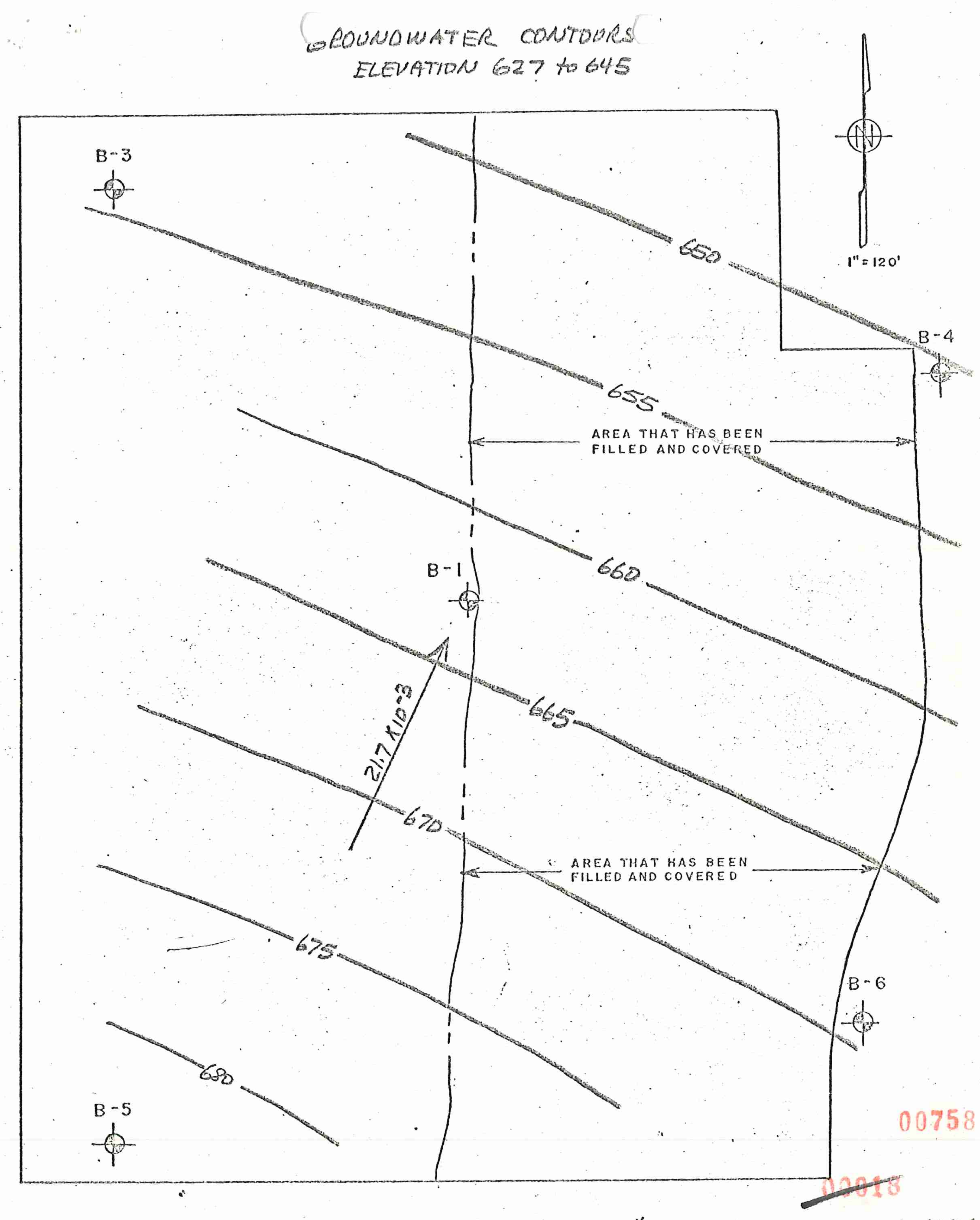
00763


STS-6148 A
PRELIMINARY* GENERALIZED GROUNDWATER
EQUIPOTENTIAL CROSS SECTION
SECTION A-A
ELEV.
730
720
710
700
690
680
670
660
650
640
630
620
610
B5
B1
B4
TO KANKAPOT CREEK
690
685
680
675
670
665
660
655
650
SCALE: HOR 1" = 200'
VER 1" = 20'
* BASED ON 2-26-76 WATER LEVEL DATA. ADDITIONAL WELLS TO BE INSTALLED
00762
00022


STS "6148-M
PRELIMINARY* GENERALIZED GROUNDWATER
EQUIPOTENTIAL CROSS SECTION
SECTION B-B
ELEV.
730
720
710
700
690
680
670
660
650
640
630
620
610
B3
B1
B6
TO KANKAPOT CREEK
695
690
685
680
675
670
665
660
655
SCALE: HOR 1"=200'
VER 1"=20'
* BASED ON 2-26-76 WATER
LEVEL DATA. ADDITIONAL WELLS
TO BE INSTALLED
00761

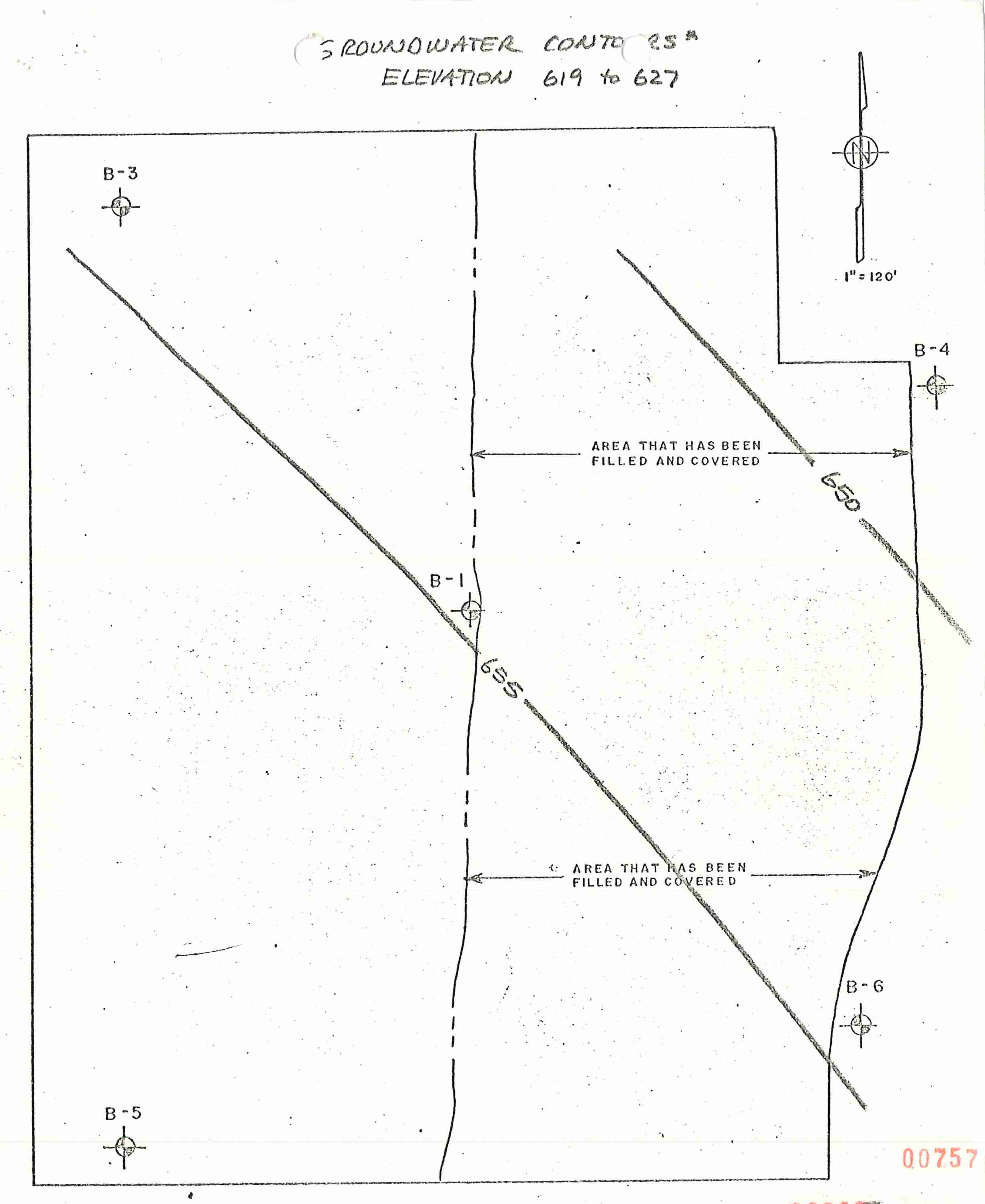

GROUNDWATER CONTOURS
ELEVATION 645 to 665
B-3
695
97x10-3
1" = 120'
B-4
AREA THAT HAS BEEN
FILLED AND COVERED
B-1
85.5 x10-3
690
680
675
685
AREA THAT HAS BEEN
FILLED AND COVERED
670
665
660
B-6
B-5
00759
*BASED ON 2-26-76 WATER
LEVEL DATA
1" = 120'

GROUNDWATER CONTOURS
ELEVATION 627 to 645



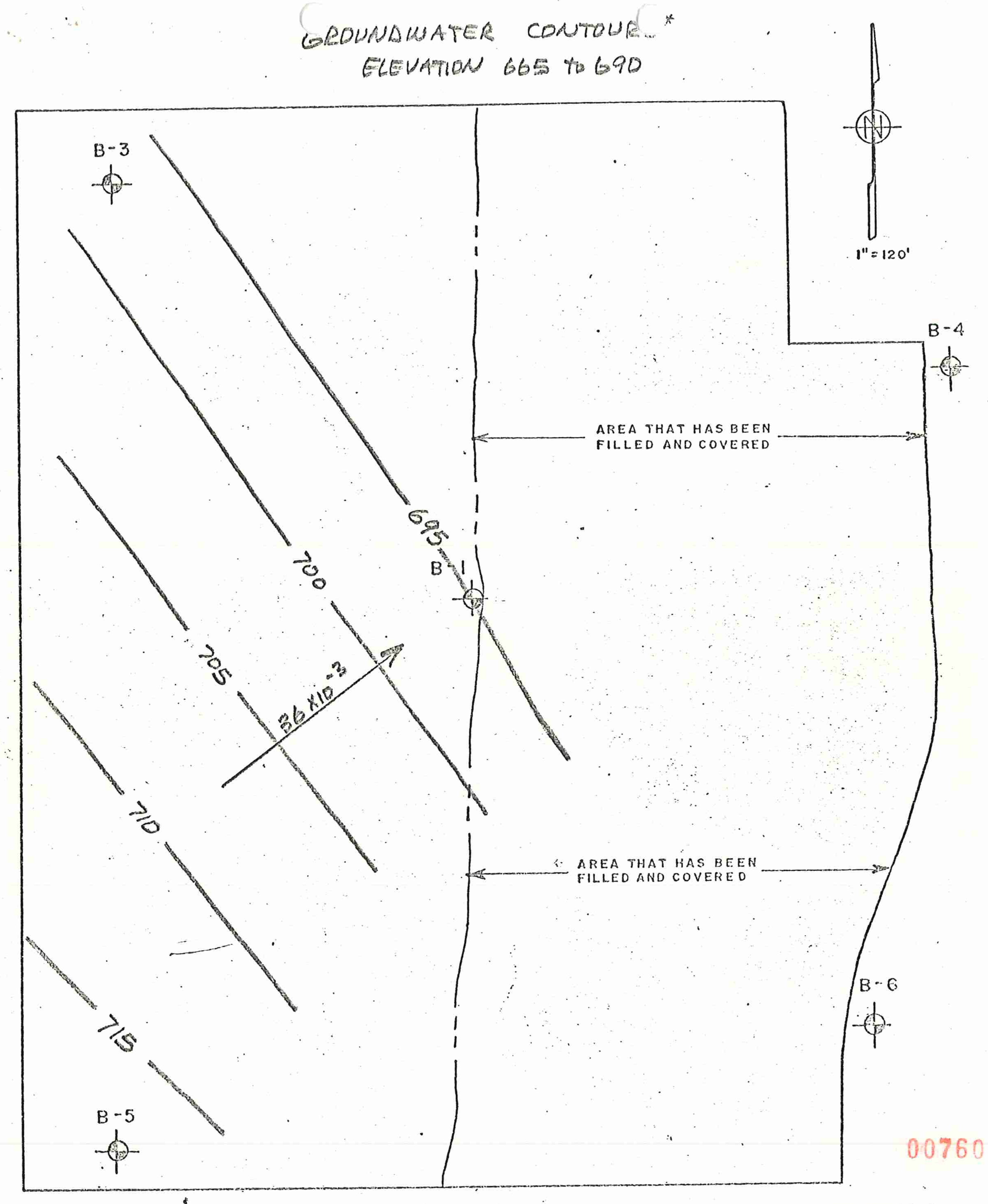
*BASED ON 2-26-76 WATER LEVEL DATA

1" = 120'



*BASED ON 2-26-76 WATER LEVEL DATA

1" = 120'



*BASED ON 2-26-76 WATER LEVEL DATA

~~00020~~

1"=120'

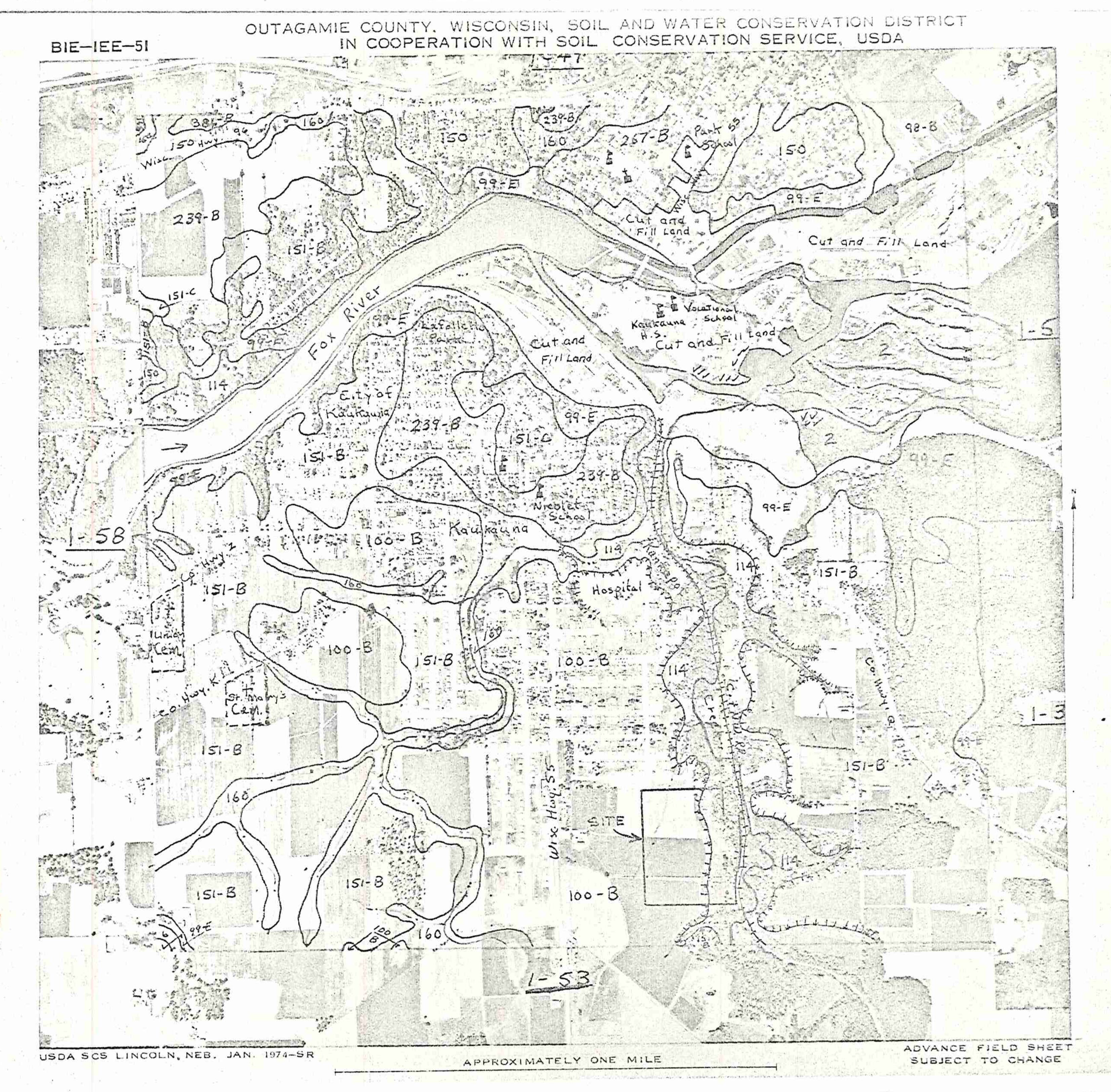
PRELIMINARY
SUMMARY OF VERTICAL GROUND WATER GRADIENTS*

Location	Direction of Flow	Gradient
B1A to B1	Down	191×10^{-3}
B3B to B3A	Down	68×10^{-3}
B3A to B3	Down	1358×10^{-3}
B4A to B4	Down	118×10^{-3}
B5A to B5	Down	55.8×10^{-3}
B6B to B6	Down	275×10^{-3}

*Based on 2-26-76 Water Level Data

BIE–IEE–51

OUTAGAMIE COUNTY, WISCONSIN, SOIL AND WATER CONSERVATION DISTRICT
IN COOPERATION WITH SOIL CONSERVATION SERVICE, USDA



USDA SCS LINCOLN, NEB. JAN. 1974-SR

APPROXIMATELY ONE MILE

ADVANCE FIELD SHEET
SUBJECT TO CHANGE

MRTSC Trial Form
File Code Soils-12
Rev. 9-10-71

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL SURVEY INTERPRETATIONS 1/

SOIL NO. 100 & 99 2/

SERIES Kewaunee
STATE Wisconsin
MLRA 95

Well drained, gently sloping to steep soils with clayey subsoils and clayey substratums formed in glacial drift. These soils have moderate available water capacity and low permeability.

ESTIMATED SOIL PROPERTIES SIGNIFICANT TO ENGINEERING

Major Soil Horizons (inches)	Classification			Coarse Fract. >3 in. %	Percentage less than 3 inches Passing Sieve No.--				LL	PI	Permea-bility in./hr.	Avail. Water Capac. in./in.	Soil Reac-tion pH	Shrink Swell Poten-tial
	USDA Texture	Unified	AASHO		4	10	40	200						
0-10	sil	ML, CL-ML	A-4	–	100	100	95-100	85-95	25-35	2-6	0.6-2.0	.22-.24	5.6-7.3	Low
10-24	c	CH	A-7	–	100	100	90-100	80-90	55-65	30-35	.06-0.2	.09-.11	5.6-6.5	High
24-60	c	CH	A-7	–	100	100	90-100	80-90	55-65	30-35	.06-0.2	.09-.11	7.4-8.4	Moderate

Flooding None

Hydrologic group: C

Depth to water table: More than 5 feet

Depth to bedrock: More than 5 feet

Corrosivity - uncoated steel: Low

Corrosivity - concrete: Low

SUITABILITY OF SOIL AS SOURCE OF SELECTED MATERIAL AND FEATURES AFFECTING USE

Roadfill	Poor - low shear strength; high compressibility.
Sand	Unsuitable - excess of fines.
Gravel	Unsuitable - excess of fines.
Topsoil	Fair for 2 to 12% slopes; poor for steeper soils.

DEGREE AND KIND OF SOIL LIMITATION FOR SELECTED USES

Septic Tank Filter Fields	Severe - slow permeability.
Sewage Lagoons	Moderate for 2 to 6% slopes; severe for steeper soils; slow permeability.
Shallow Excavations	Moderate - clayey subsoil and substratum; difficult to excavate.
Dwellings: With Basements) Without Basements)	Moderate - clayey subsoil and substratum; moderate to high shrink-swell.
Sanitary Landfill	Moderate - clayey subsoil and substratum; difficult to work; slow permeability.
Local Roads and Streets	Severe - clayey subsoil and substratum; moderate to high shrink-swell; moderate frost action.
Potential Frost Action	Moderate - strong capillary action.

MAJOR SOIL FEATURES AFFECTING SELECTED USES

Pond Reservoir Areas	Slowly permeable; clayey subsoil and substratum.
Embankments, Dikes, and Levees	Low shear strength; high compressibility.
Drainage of Cropland and Pasture	Natural drainage adequate.
Irrigation	Slow permeability; medium available water capacity.
Terraces and Diversions	Clayey subsoil and substratum; severe erosion hazard on steeper soils.
Grassed Waterways	Clayey subsoil and substratum; severe erosion hazard on steeper soils.
Golf Course Fairways:	Slowly permeable; slow to dry; muddy when wet.

1/ Use in conjunction with Guide to Soil Survey Interpretation Sheets.

2/ 99 soils are the * units.



00754

Series Kewaunee

DEGREE OF SOIL LIMITATION AND MAJOR FEATURES AFFECTING RECREATION USES

Camp Areas	Moderate for 2 to 12% slopes; severe for steeper soils; slowly permeable; muddy when wet.
Picnic Areas	Slight for 2 to 6% slopes; moderate for 6 to 12% slopes; severe for steeper soils.
Playgrounds	Moderate for 2 to 6% slopes; severe for steeper soils; leveling may expose clayey subsoil.
Paths and Trails	Slight for 2 to 12% slopes; moderate for 12 to 20% slopes; severe for steeper soils; muddy when wet.

CAPABILITY, SOIL LOSS FACTORS, AND POTENTIAL YIELDS--(High level management)

Phases of Series	Capability	Soil Loss K	Soil Loss T	Corn grain (bu)	Corn silage (T)	Oats (bu)	
2-6%	IIe6	.43	3	85	15	75	
6-12%	IIIe6			80	13	70	
6-12%*	IVe6			70	10	60	
12-20%	IVe6			70	10	60	
12-20%*	VIe6			-	-	-	
20-30%	VIe6			-	-	-	
20-45%*	VIIe6			-	-	-	

PASTURELAND AND HAYLAND

Phases of Series	Group	Species, Yield in AUMs for Dryland (Irrigated) Forage Production
2-12%	As1	Alfalfa-brome hay - 4.5 T/A; bluegrass pasture - 140 AUD.
12-20%	As1	Alfalfa-brome hay - 4.0 T/A; bluegrass pasture - 130 AUD.
20-30%	Ar1	Alfalfa-brome hay - 3.5 T/A; bluegrass pasture - 130 AUD.
6-20%*	As1	Alfalfa-brome hay - 4.0 T/A; bluegrass pasture - 130 AUD.
20-45%*	Ar1	Alfalfa-brome hay - 2.5 T/A; bluegrass pasture - 100 AUD.

WILDLIFE HABITAT SUITABILITY

Phases of Series	Potential for-- Grain and Seed Crops	Grasses, Legumes	Wild Herbaceous Plants	Hardwood Trees and Shrubs	Coniferous Plants	Wetland Food and Cover	Shallow Water Devel.	Potential for-- Openland Wildlife	Woodland Wildlife	Wetland Wildlife
2-12%	Good	Good	Good	Good	Good	V. poor	V. poor	Good	Good	V. poor
12-20%	Fair	Good	Good	Good	Good	V. poor	V. poor	Fair	Good	V. poor
20-30%	V. poor	Fair	Good	Good	Good	V. poor	V. poor	Poor	Good	V. poor
6-12%*	Fair	Good	Poor	Fair	Fair	V. poor	V. poor	Fair	Fair	V. poor
12-45*	V. poor	Fair	Poor	Fair	Fair	V. poor	V. poor	Poor	Fair	V. poor

WOODLAND SUITABILITY

Phases of Series	Ordination	Potential Productivity: Important Trees	Site Index	Woodland Management Hazards: Erosion Hazard	Equipment Limitations	Seeding Mortality	Plant Competition	Suitable Species: To Favor	To Plant	Other
2-12%	2c1	red oak	MH	Slight	Slight	Slight	Slight	red oak	wh. pine	
6-12%*	2c1	sugar		Slight	Slight	Slight	Slight	sugar	wh.spruce	
12-30%	2c2	maple		Moderate	Moderate	Sl. N&E)	Slight	maple	bl. spruce	
12-30%	2c2	beech		Moderate	Moderate	Mod. S&W)	Slight			
20-45%*	2c2			Moderate	Moderate	do.	Slight			

RANGE

Phases of Series	Range Site Name	Climax Vegetation and Productivity of Air-Dry Herbage (lb./ac.)

WINDBREAK

Group	Adapted Trees to Plant	Tree Height Prediction at 20 Years Age	Relative Vigor

OTHER